ssniff® experimental diets for laboratory animals

Complete diets for all scientific questions and study conditions

Today ssniff Spezialdiäten GmbH can be described as the leading producer of experimental and purified diets and of special diets, with a long experience and excellent professional competence.

Since ssniff offers a vast number of standard experimental diets (EF), in the following data sheets only a small extract of diets representing the feed categories (see below) can be given. There exists also the possibility to design and produce the experimental diets exactly according to customer’s demands or according to diets published in literature. Additionally, on customer’s request ssniff can arrange a feed analysis (e.g. crude nutrients, certain minerals or vitamins etc.) by an accredited, independent laboratory.

Diet Categories

1 Fat / Fatty acids: free / deficient / excessive
2 Protein / Amino acids: free / deficient / excessive
3 Vitamins: free or low / deficient / excessive
4 Minerals:
   Trace elements: deficient / excessive
5 Carbohydrates: high sugar / low starch; low sugar / high starch

Animal species / Animal Categories

1 Rat / Mouse
2 Guinea pig / Rabbit
3 Hamster / Gerbil
4 Minipig / Pig
5 Dog / Cat
6 Non-human Primates
7 Poultry
8 Ruminants
9 Reptiles (Amphibia)
10 Fish - cold/warm water

The ssniff® experimental diets are also designed for ad libitum intake. Nevertheless, in some laboratory animal species or lines as well as for certain scientific questions or experimental conditions it may be useful to restrict the daily feed (energy) supply. If it is expected in a study with several treatment groups, that one group will eat less than the others a pair-feeding system might be applied, in which the feed (energy) supply to all groups should be adjusted to that group showing the lowest feed intake; one example for the use of that system is the feeding of high protein diets (>50 % CP), which will result in a classical depression of feed intake due to amino acid imbalance.
ssniff® EF R/M Control

Experimental diet for rats and mice (complete feed)
Virtually chlorophyll free, low fluorescence

Description
This experimental diet bases mainly on purified feed ingredients (purified diet); it is therefore ideally composed for studies, in which an exact adjustment of the crude nutrient concentrations is necessary. This experimental diet meets all nutrient requirements of adult as well as of growing rats and mice. This feedingstuff serves also as the basis for almost all purified ssniff® diets.

Crude Nutrients [%]
- Dry matter: 95.2
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 59.4
- Starch: 46.8
- Sugar: 10.8

Energy [MJ/kg]
- Gross Energy (GE): 18.0
- Metabolizable Energy (ME):
  - 15.4 1)
  - 15.0 2)

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.45
- C 16:1: 0.02
- C 18:0: 0.19
- C 18:1: 1.07
- C 18:2: 2.12
- C 18:3: 0.26
- C 20:0: 0.02
- C 20:1: —
- C 20:5: —
- C 22:6: —

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin B₆: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Feed composition
On request

Main products
- E15000-00 Meal / powder
- E15000-04 10 mm pellets

Production and sale
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1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF R/M Control, 5 % fat**

Experimental diet for rats and mice (complete feed)
Virtually chlorophyll free, low fluorescence

### Description
This experimental diet bases mainly on purified feed ingredients (purified diet); it is therefore ideally composed for studies, in which an exact adjustment of the crude nutrient concentrations is necessary. This experimental diet meets all nutrient requirements of adult as well as of growing rats and mice.

### Crude Nutrients [%]
- Dry matter: 94.8
- Crude protein (N x 6.25): 17.8
- Crude fat: 5.1
- Crude fibre: 5.0
- Crude ash: 5.3
- N free extracts: 61.9
- Starch: 36.8
- Dextrins: 14.8
- Sugar: 11.0

### Energy [MJ/kg]
- Gross Energy (GE): 18.3
- Metabolizable Energy (ME)
  - 15.8 \(^1\)
  - 15.6 \(^2\)

### Minerals [%]
- Calcium: 0.92
- Phosphorus: 0.62
- Sodium: 0.21
- Magnesium: 0.21
- Potassium: 0.96

### Fatty acids [%]
- C 8:0
- C 10:0
- C 12:0
- C 14:0: 0.02
- C 16:0: 0.55
- C 16:1: 0.03
- C 18:0: 0.24
- C 18:1: 1.33
- C 18:2: 2.65
- C 18:3: 0.32
- C 20:0: 0.02
- C 20:1
- C 20:5
- C 22:6

### Amino acids [%]
- Lysine: 1.47
- Methionine: 0.65
- Met+Cys: 0.92
- Threonine: 0.78
- Tryptophan: 0.24
- Arginine: 0.69
- Histidine: 0.53
- Valine: 1.23
- Isoleucine: 1.00
- Leucine: 1.75
- Phenylalanine: 0.92
- Phe+Tyr: 1.85
- Glycine: 0.38
- Glutamic acid: 3.97
- Aspartic acid: 1.31
- Proline: 2.02
- Alanine: 0.59
- Serine: 1.05

### Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

### Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 59 mg
- Copper: 13 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

### Production and sale
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\(^1\) ME calculated according to the pig formula, Annex 4 of the German feed regulation

\(^2\) ME calculated with the Atwater factors
ssniff® EF R/M with 20 % fat
Survey of the different fat sources and the corresponding fatty acid compositions

Description
These high fat diets are designed to induce obesity in rats and mice; with small modifications in the feed composition they can also be used for other laboratory animal species. Depending on the rat or mouse strain and particularly on the fatty acid composition (saturated FA) the diets may also induce pro-atherogenic or atherogenic defects (plaques) in the animal; these effects can be aggravated by addition of crystalline cholesterol.

Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Crude Nutrients</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.1</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.7</td>
</tr>
<tr>
<td>Crude fat</td>
<td>20.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>44.7</td>
</tr>
<tr>
<td>Starch</td>
<td>27.4</td>
</tr>
<tr>
<td>Sugar</td>
<td>15.5</td>
</tr>
</tbody>
</table>

Energy [MJ/kg]

<table>
<thead>
<tr>
<th>Energy</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>21.8</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>18.3</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>18.5</td>
</tr>
</tbody>
</table>

Calculation basis
1) According to the pig formula, Annex 4 of the German feed regulation
2) Atwater factors (human nutrition)

Concentrations of the amino acids, minerals, vitamins and trace elements correspond to the basic mixture E15000

Fatty acid composition [% in the diet]

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td></td>
<td></td>
<td></td>
<td>0.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 6:0</td>
<td></td>
<td></td>
<td></td>
<td>0.50</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>C 8:0</td>
<td>1.52</td>
<td></td>
<td></td>
<td>0.28</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>C 10:0</td>
<td>1.15</td>
<td></td>
<td></td>
<td>0.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 12:0</td>
<td>8.98</td>
<td>0.02</td>
<td>0.69</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 14:0</td>
<td>3.44</td>
<td>0.66</td>
<td>2.11</td>
<td>0.28</td>
<td>0.21</td>
<td>0.02</td>
<td>0.05</td>
<td>1.18</td>
</tr>
<tr>
<td>C 16:0</td>
<td>1.72</td>
<td>5.01</td>
<td>5.33</td>
<td>4.77</td>
<td>8.35</td>
<td>4.98</td>
<td>2.08</td>
<td>5.73</td>
</tr>
<tr>
<td>C 16:1</td>
<td></td>
<td>0.49</td>
<td>0.36</td>
<td>0.60</td>
<td>0.10</td>
<td>0.07</td>
<td>0.11</td>
<td>0.23</td>
</tr>
<tr>
<td>C 17:0</td>
<td></td>
<td>0.24</td>
<td>0.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.52</td>
<td>3.53</td>
<td>1.95</td>
<td>2.65</td>
<td>0.96</td>
<td>6.88</td>
<td>0.90</td>
<td>1.75</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.34</td>
<td>7.33</td>
<td>4.43</td>
<td>8.14</td>
<td>7.45</td>
<td>6.40</td>
<td>5.21</td>
<td>5.89</td>
</tr>
<tr>
<td>C 18:2</td>
<td>0.33</td>
<td>0.50</td>
<td>0.36</td>
<td>1.82</td>
<td>2.02</td>
<td>0.40</td>
<td>10.60</td>
<td>1.06</td>
</tr>
<tr>
<td>C 18:3</td>
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<td>0.09</td>
<td>0.11</td>
<td>0.20</td>
<td>0.10</td>
<td>0.06</td>
<td>1.30</td>
<td>0.08</td>
</tr>
<tr>
<td>C 20:0</td>
<td></td>
<td>0.02</td>
<td>0.03</td>
<td></td>
<td>0.10</td>
<td>0.20</td>
<td>0.10</td>
<td>0.05</td>
</tr>
<tr>
<td>C 20:1</td>
<td></td>
<td>0.01</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 20:4</td>
<td></td>
<td>0.05</td>
<td>0.34</td>
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<td></td>
<td></td>
<td></td>
<td>0.01</td>
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<tr>
<td>C 20:5</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 22:6</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Cholesterol *</td>
<td>189</td>
<td>570</td>
<td>172</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>187</td>
</tr>
</tbody>
</table>

* original content (variable): supplementations of about 150 to 25,000 mg cholesterol/kg feed are possible

Production and sale
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Feed composition
On request
ssniff® Different fat levels
Survey of experimental diets with graded fat and energy levels

Description
These diets contain gradually increasing fat concentrations; they are therefore suitable for the induction of different adverse effects and syndroms (e.g. fatty acid deficiency; obesity; diabetes II etc.) depending on the fat content and on the fat sources. The dietary supply with the other essential nutrients (amino acids, minerals, trace elements, vitamins) was adjusted to the same high level of the control diet, E15000-0.

Crude fat and fatty acid contents [% in the diet] and energy densities [MJ/kg]

<table>
<thead>
<tr>
<th>Article No.</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E15100</td>
<td>0.2</td>
<td>10.2</td>
<td>20.2</td>
<td>30.2</td>
<td>79.2</td>
</tr>
<tr>
<td>E15112</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>E15114</td>
<td></td>
<td></td>
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<td>E15116</td>
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<tr>
<td>E15149</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Gross Energy, GE**
17.2       19.5       21.7       24.0       34.9

**Metabolizable Energy, ME**
14.2       16.3       18.5       20.6       31.6

**Fatty acids**

<table>
<thead>
<tr>
<th></th>
<th>C 4:0</th>
<th>C 6:0</th>
<th>C 8:0</th>
<th>C 10:0</th>
<th>C 12:0</th>
<th>C 14:0</th>
<th>C 16:0</th>
<th>C 16:1</th>
<th>C 17:0</th>
<th>C 18:0</th>
<th>C 18:1</th>
<th>C 18:2</th>
<th>C 18:3</th>
<th>C 20:0</th>
<th>C 20:1</th>
<th>C 20:4</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>0.36</td>
<td>0.23</td>
<td>0.13</td>
<td>0.28</td>
<td>0.39</td>
<td>1.92</td>
<td>0.66</td>
<td>2.24</td>
<td>0.06</td>
<td>10.14</td>
<td>30.45</td>
<td>6.53</td>
<td>0.75</td>
<td>0.02</td>
<td>0.01</td>
<td>1.19</td>
</tr>
</tbody>
</table>

CH = Carbohydrates; CP = Crude protein; CL = Crude fat (lipids)

Diets (1) to (4) vegetable fat; diet (5) animal fat (butter, lard), pelleting not possible

1) Calculated with the Atwater factors (human nutrition); for ME acc. pig formula see data sheets;

2) Variation of the fatty acid composition is possible by exchange of the fat source

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Feed compositions
On request
ssniff® EF R/M without Fat addition
Experimental diet for rats and mice - without fat supplementation

Description
This experimental diet for rats and mice contains only traces of crude fat (< 0.5 % CL), which will result in a deficient supply of the essential fatty acids, mainly linoleic acid. Time and extent of the incidence of the fatty acid deficiency may depend on the dietary history, i.e. the fatty acid supply before the beginning of the experiment and the endogeneous fatty acid status at start of the study. It is therefore recommended to feed the diet in the long-term.

Crude Nutrients [%]
- Dry matter: 95.2
- Crude protein (N x 6.25): 20.8
- Crude fat: 0.2
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 63.6
- Starch: 45.0
- Sugar: 16.8

Energy [MJ/kg]
- Gross Energy (GE): 17.2
- Metabolizable Energy (ME): 14.7 \(^1\)

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0
- C 10:0
- C 12:0
- C 14:0
- C 16:0
- C 16:1
- C 18:0
- C 18:1
- C 18:2
- C 18:3
- C 20:0
- C 20:1
- C 20:5
- C 22:6

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D\(_3\): 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B\(_1\)): 16 mg
- Riboflavin (B\(_2\)): 16 mg
- Pyridoxine (B\(_6\)): 18 mg
- Cobalamin (B\(_12\)): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Feed composition
- On request

Main products
- E15100-10 Meal, single ground
- E15100-14 10 mm pellets

Production and sale
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\(^1\) ME calculated according to the pig formula, Annex 4 of the German feed regulation
\(^2\) ME calculated with the Atwater factors
ssniff® EF R/M with 10 % Fat
Experimental diet for rats and mice, middle-chain saturated fatty acids

Description
In this diet which bases in principle on the control diet E15000-0 the fat source has been exchanged (see fatty acid composition) and the fat content was increased to around 10 %; even these small modifications may support the development of obesity and slight pro-atherogenic defects in certain sensitive mouse and rat lines. The cholesterol concentration in the feed and subsequently in the plasma of the animal can be increased by addition of crystalline cholesterol, which may increase the incidence and extent of the symptoms (plaques).

Crude Nutrients [%]
- Dry matter: 95.7
- Crude protein (N x 6.25): 20.7
- Crude fat: 10.2
- Crude fibre: 5.0
- Crude ash: 5.9
- N free extracts: 53.9
- Starch: 33.4
- Sugar: 18.3

Energy [MJ/kg]
- Gross Energy (GE): 19.5
- Metabolizable Energy (ME): 16.5

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.62
- Sodium: 0.18
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 6:0: —
- C 8:0: 0.61
- C10:0: 0.46
- C12:0: 3.60
- C14:0: 1.39
- C16:0: 0.93
- C16:1: 0.01
- C17:0: —
- C18:0: 0.31
- C18:1: 1.08
- C18:2: 1.19
- C18:3: 0.13
- C20:0: 0.01
- C20:1: —
- C20:4: —

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenytoin: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Cholesterol [mg/kg] addition optional

Feed composition
On request

Main products
- E15112-30 Meal, single ground
- E15112-34 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

51 % from Carbohydrates
28 % from Protein
21 % from Fat
55 % from Carbohydrates
24 % from Fat
21 % from Protein
snniff® EF R/M with 20 % Fat

Experimental diet for rats and mice, middle-chain saturated fatty acids

Description
As a result of the high energy density due to fat supplementation (20 % CL), this experimental diet will induce obesity, when fed to satiation (ad libitum access). Moreover, the incidence and extent of obesity and also of atherogenic defects (plaques) can be accelerated by further increasing the fat content and dietary addition of crystalline cholesterol.

Crude Nutrients [%]
- Dry matter: 96.2
- Crude protein (N x 6.25): 20.7
- Crude fat: 20.2
- Crude fibre: 5.0
- Crude ash: 6.0
- N free extracts: 44.3
- Starch: 21.9
- Sugar: 19.9

Energy [MJ/kg]
- Gross Energy (GE): 21.7
- Metabolizable Energy (ME): 18.2

Metabolizable Energy (ME)
- 37% from Carbohydrates
- 25% from Protein
- 40% from Carbohydrates
- 19% from Protein

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.62
- Sodium: 0.18
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 6:0
- C 8:0: 1.37
- C 10:0: 1.04
- C 12:0: 8.09
- C 14:0: 3.11
- C 16:0: 1.79
- C 16:1: 0.01
- C 17:0:
- C 18:0: 0.57
- C 18:1: 1.75
- C 18:2: 1.36
- C 18:3: 0.13
- C 20:0: 0.01
- C 20:1:
- C 20:4:

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenyalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Feed composition
On request

Main products
E15114-30 Meal, single ground
E15114-34 10 mm pellets

Production and sale
snniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@snniff.de
www.ssniff.de / www.ssniff.com
ssniff® EF R/M with 30 % Fat
Experimental diet for rats and mice, middle-chain saturated fatty acids

**Description**
The high energy density due to fat supplementation (30 % CL) and the saturated fatty acids may support the development of *Metabolic Syndrome* with obesity, Type II diabetes (non insulin dependent diabetes mellitus, NIDDM) and atherogenic defects. Moreover, the incidence and extent of atherosclerotic defects (plaques) can be increased by addition of crystalline cholesterol to the feed.

### Crude Nutrients [％]
- Dry matter: 96.7
- Crude protein (N x 6.25): 20.7
- **Crude fat**: 30.2
- Crude ash: 6.3
- N free extracts: 34.6
- Starch: 10.3
- Sugar: 21.4

### Energy [MJ/kg]
- Gross Energy (GE): 24.0
- Metabolizable Energy (ME): 19.9

### Metabolizable Energy (ME)
- 25 % from Carbohydrates
- 23 % from Protein
- 52 % from Fat
- 20.6

### Amino acids [％]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

### Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D$_3$: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B$_1$): 16 mg
- Riboflavin (B$_2$): 16 mg
- Pyridoxine (B$_6$): 18 mg
- Cobalamin (B$_12$): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

### Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

### Minerals [％]
- Calcium: 0.90
- Phosphorus: 0.62
- Sodium: 0.18
- Magnesium: 0.21
- Potassium: 0.97

### Fatty acids [％]
- C 6:0
- C 8:0: 2.13
- C10:0: 1.61
- C12:0: 12.58
- C14:0: 4.83
- C16:0: 2.65
- C16:1: 0.01
- C17:0
- C18:0: 0.83
- C18:1: 2.42
- C18:2: 1.52
- C18:3: 0.13
- C20:0: 0.01
- C20:1
- C20:4

### Cholesterol [mg/kg] addition optional

**Feed composition**
On request

**Main products**
- E15116-30 Meal, single ground
- E15116-34 10 mm pellets

**Production and sale**
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.snniff.de / www.snniff.com
ssniff® EF R/M with 10 % Fat
Experimental diet for rats and mice, long-chain saturated fatty acids

Description
In this diet which bases in principle on the control diet E15000-0 the fat source has been exchanged (see fatty acid composition) and the fat content was increased to around 10 %; even these small modifications may support the development of obesity and slight proatherogenic defects in certain sensitive mouse and rat lines. The cholesterol concentration in the feed and subsequently in the plasma of the animal can be increased by addition of crystalline cholesterol, which may increase the incidence and extent of the symptoms (plaques).

Crude Nutrients [%]
- Dry matter 95.7
- Crude protein (N x 6.25) 20.8
- Crude fat 10.1
- Crude fibre 5.0
- Crude ash 5.6
- N free extracts 54.2
- Starch 35.7
- Sugar 16.6

Energy [MJ/kg]
- Gross Energy (GE) 19.5
- Metabolizable Energy (ME)
  - 16.5 \(^{(1)}\)
  - 16.4 \(^{(2)}\)

Minerals [%]
- Calcium 0.90
- Phosphorus 0.63
- Sodium 0.19
- Magnesium 0.21
- Potassium 0.97

Fatty acids [%]
- C 8:0
- C 10:0
- C 12:0 0.01
- C 14:0 0.34
- C 16:0 2.52
- C 16:1 0.25
- C 17:0 0.12
- C 18:0 1.77
- C 18:1 3.68
- C 18:2 0.25
- C 18:3 0.05
- C 20:0 0.01
- C 20:1
- C 20:4 0.02
- C 20:5
- C 22:6

Cholesterol [mg/kg] 95 (original content)

Amino acids [%]
- Lysine 1.71
- Methionine 0.73
- Met+Cys 0.82
- Threonine 0.93
- Tryptophan 0.27
- Arginine 0.76
- Histidine 0.66
- Valine 1.42
- Isoleucine 1.09
- Leucine 2.05
- Phenylalanine 1.11
- Phe+Tyr 2.22
- Glycine 0.43
- Glutamic acid 4.69
- Aspartic acid 1.55
- Proline 2.39
- Alanine 0.68
- Serine 1.24

Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D\(_3\) 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B\(_1\)) 16 mg
- Riboflavin (B\(_2\)) 16 mg
- Pyridoxine (B\(_6\)) 18 mg
- Cobalamin (B\(_12\)) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 56 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 1,040 mg
- Inositol 80 mg

Trace elements per kg
- Iron 166 mg
- Manganese 98 mg
- Zinc 65 mg
- Copper 14 mg
- Iodine 1.2 mg
- Selenium 0.14 mg
- Cobalt 0.15 mg

Main products
- E15122-30 Meal, single ground
- E15122-34 10 mm pellets

Feed composition
On request

Production and sale
ssniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

\(^{(1)}\) ME calculated according to the pig formula, Annex 4 of the German feed regulation
\(^{(2)}\) ME calculated with the Atwater factors
snniff® EF R/M with 20 % Fat

Experimental diet for rats and mice, long-chain saturated fatty acids

Description
As a result of the high energy density due to fat supplementation (20 % CL), this experimental diet will induce obesity, when fed to satiation (ad libitum access); the diet supports also the development of atherosclerotic lesions (plaques) in the cardiovascular system. Moreover, the incidence and extent of obesity and also of the atherogenic defects can be accelerated by a further increase of the fat content and dietary addition of crystalline cholesterol.

Crude Nutrients [%]
- Dry matter 96.1
- Crude protein (N x 6.25) 20.7
- Crude fat 20.1
- Crude fibre 5.0
- Crude ash 5.6
- N free extracts 44.7
- Starch 26.5
- Sugar 16.5

Energy [MJ/kg]
- Gross Energy (GE) 21.8
- Metabolizable Energy (ME)
  - 18.3 \(^1\)
  - 18.5 \(^2\)

Amino acids [%]
- Lysine 1.71
- Methionine 0.73
- Met+Cys 0.82
- Threonine 0.93
- Tryptophan 0.27
- Arginine 0.76
- Histidine 0.66
- Valine 1.42
- Isoleucine 1.09
- Leucine 2.05
- Phenylalanine 1.11
- Phe+Tyr 2.22
- Glycine 0.43
- Glutamic acid 4.69
- Aspartic acid 1.55
- Proline 2.39
- Alanine 0.68
- Serine 1.24

Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D\(_3\) 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B\(_1\)) 16 mg
- Riboflavin (B\(_2\)) 16 mg
- Pyridoxine (B\(_6\)) 18 mg
- Cobalamin (B\(_{12}\)) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 19 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 1,040 mg
- Inositol 80 mg

Trace elements per kg
- Iron 166 mg
- Manganese 98 mg
- Zinc 65 mg
- Copper 14 mg
- Iodine 1.2 mg
- Selenium 0.14 mg
- Cobalt 0.15 mg

Cholesterol [mg/kg] 189

For the Metabolizable Energy (ME) calculation:
\(^1\) ME calculated according to the pig formula, Annex 4 of the German feed regulation
\(^2\) ME calculated with the Atwater factors

Production and sale
snniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
E-Mail mail@snniff.de
www.ssniff.de / www.ssniff.com

Feed composition
On request

Main products
- E15124-30 Meal, single ground
- E15124-34 10 mm pellets
**ssniff® EF R/M with 30 % Fat**

Experimental diet for rats and mice, long-chain saturated fatty acids

**Description**

The experimental diet supports the development of Metabolic Syndrome with obesity, Type II diabetes (non insulin dependent diabetes mellitus, NIDDM) and atherosclerotic defects due to the high fat (energy) concentration (30 % CL) and the saturated fatty acids. Moreover, the incidence and extent of atherosclerotic lesions (plaques) can be accelerated by addition of crystalline cholesterol to the feed.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.6</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.7</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td>30.0</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>34.3</td>
</tr>
<tr>
<td>Starch</td>
<td>17.2</td>
</tr>
<tr>
<td>Sugar</td>
<td>16.3</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>24.1</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td></td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.73</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.93</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.27</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.76</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.66</td>
</tr>
<tr>
<td>Valine</td>
<td>1.42</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.09</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.05</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.11</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.22</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.43</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.69</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.55</td>
</tr>
<tr>
<td>Proline</td>
<td>2.39</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.68</td>
</tr>
<tr>
<td>Serine</td>
<td>1.24</td>
</tr>
</tbody>
</table>

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>---</td>
</tr>
<tr>
<td>C10:0</td>
<td>---</td>
</tr>
<tr>
<td>C12:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C14:0</td>
<td>0.99</td>
</tr>
<tr>
<td>C16:0</td>
<td>7.49</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.74</td>
</tr>
<tr>
<td>C17:0</td>
<td>0.36</td>
</tr>
<tr>
<td>C18:0</td>
<td>5.29</td>
</tr>
<tr>
<td>C18:1</td>
<td>10.98</td>
</tr>
<tr>
<td>C18:2</td>
<td>0.75</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.13</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C20:4</td>
<td>0.07</td>
</tr>
<tr>
<td>C20:5</td>
<td>---</td>
</tr>
<tr>
<td>C22:6</td>
<td>---</td>
</tr>
</tbody>
</table>

**Cholesterol [mg/kg]** 284

(original content)

**Vitamins per kg**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>49 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>56 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>19 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>310 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

**Trace elements per kg**

<table>
<thead>
<tr>
<th>Trace Element</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>65 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.15 mg</td>
</tr>
</tbody>
</table>

**Production and sale**

ssniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
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www.ssniff.de / www.ssniff.com

**Feed composition**

On request

**Main products**

E15126-30  Meal, single ground
E15126-34  10 mm pellets

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® EF R/M with 10 % Fat

Experimental diet for rats and mice, long-chain fatty acids

**Description**

In this diet which bases in principle on the control diet E15000-0 the fat source has been exchanged (see fatty acid composition) and the fat content was increased to around 10%; even these small modifications may support the development of obesity and slight pro-atherogenic defects in certain sensitive mouse and rat lines. The indicated cholesterol concentration originates from the fat source; the dietary fat and cholesterol content can be further increased to accelerate the incidence and extent of the symptoms (obesity, plaques).

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.7</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.8</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td>10.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>54.2</td>
</tr>
<tr>
<td>Starch</td>
<td>35.7</td>
</tr>
<tr>
<td>Sugar</td>
<td>16.6</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- **Gross Energy (GE)**: 19.5
- **Metabolizable Energy (ME)**: 16.5
  
  1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C8:0</td>
<td></td>
</tr>
<tr>
<td>C10:0</td>
<td></td>
</tr>
<tr>
<td>C12:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C14:0</td>
<td>0.15</td>
</tr>
<tr>
<td>C16:0</td>
<td>2.40</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.30</td>
</tr>
<tr>
<td>C17:0</td>
<td></td>
</tr>
<tr>
<td>C18:0</td>
<td>1.33</td>
</tr>
<tr>
<td>C18:1</td>
<td>4.08</td>
</tr>
<tr>
<td>C18:2</td>
<td>0.91</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.10</td>
</tr>
<tr>
<td>C20:0</td>
<td></td>
</tr>
<tr>
<td>C20:1</td>
<td></td>
</tr>
<tr>
<td>C20:4</td>
<td>0.17</td>
</tr>
<tr>
<td>C20:5</td>
<td></td>
</tr>
<tr>
<td>C22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Cholesterol [mg/kg]**: 86 (original content)

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.73</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.93</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.27</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.76</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.66</td>
</tr>
<tr>
<td>Valine</td>
<td>1.42</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.09</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.05</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.11</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.22</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.43</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.69</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.55</td>
</tr>
<tr>
<td>Proline</td>
<td>2.39</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.68</td>
</tr>
<tr>
<td>Serine</td>
<td>1.24</td>
</tr>
</tbody>
</table>

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

**Feed composition**

- On request

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors

---

**Main products**

- E15142-30 Meal, single ground
- E15142-34 10 mm pellets
## ssniff® EF R/M with 20 % Fat

### Experimental diet for rats and mice, long-chain fatty acids

#### Description
As a result of the high energy density due to fat supplementation (20 % CL), this experimental diet will induce obesity, when fed to satiation (ad libitum access); the diet supports also the development of atherosclerotic lesions (plaques) in the cardio vascular system. Moreover, the incidence and extent of obesity and also of the atherogenic defects can be accelerated by a further increase of the fat content and dietary addition of crystalline cholesterol.

#### Crude Nutrients [%]
- Dry matter: 96.1
- Crude protein (N x 6.25): 20.7
- Crude fat: 20.1
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 44.7
- Starch: 26.5
- Sugar: 16.5

#### Energy
- Gross Energy (GE): 21.8
- Metabolizable Energy (ME): 18.3
  1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
  2) ME calculated with the Atwater factors

#### Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

#### Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

#### Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

#### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fatty acids [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C  8:0</td>
</tr>
<tr>
<td>C 10:0</td>
</tr>
<tr>
<td>C 12:0</td>
</tr>
<tr>
<td>C 14:0</td>
</tr>
<tr>
<td>C 16:0</td>
</tr>
<tr>
<td>C 16:1</td>
</tr>
<tr>
<td>C 17:0</td>
</tr>
<tr>
<td>C 18:0</td>
</tr>
<tr>
<td>C 18:1</td>
</tr>
<tr>
<td>C 18:2</td>
</tr>
<tr>
<td>C 18:3</td>
</tr>
<tr>
<td>C 20:0</td>
</tr>
<tr>
<td>C 20:1</td>
</tr>
<tr>
<td>C 20:4</td>
</tr>
<tr>
<td>C 20:5</td>
</tr>
<tr>
<td>C 22:6</td>
</tr>
</tbody>
</table>

#### Cholesterol [mg/kg] 172

(Original content)

#### Feed composition

**On request**

#### Main products
- E15144-30  Meal, single ground
- E15144-34  10 mm pellets

#### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com
ssniff® EF R/M with 80 % Fat (ketogenic)

Experimental diet for rats and mice, ketogenic diet with long-chain fatty acids

**Description**

The crude fat content in this experimental diet was increased to around 80 % CL; the feed is therefore only in a pasty form available. As a result of the high fat and energy content the diet will quickly induce a marked obesity with all consequences (Metabolic Syndrome, diabetes Type II). Moreover, because of its ketogenic characteristic the feedingstuff is also suitable for studies in the field of epilepsy research.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>99.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td><strong>79.2</strong></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>4.5</td>
</tr>
<tr>
<td>N free extracts</td>
<td>2.2</td>
</tr>
<tr>
<td>Starch</td>
<td>0.6</td>
</tr>
<tr>
<td>Sugar</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- **Gross Energy (GE)**: 34.9
- **Metabolizable Energy (ME)**: 28.6

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 153 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 30 µg
- Cobalamine (B₁₂): 153 mg
- Nicotinic acid: 49 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 300 µg
- Choline-Chloride: 1,015 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 138 mg
- Manganese: 81 mg
- Zinc: 51 mg
- Copper: 11 mg
- Iodine: 1.0 mg
- Selenium: 0.10 mg
- Cobalt: 0.11 mg

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.79</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.57</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.15</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.17</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.79</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

- C 4:0: 0.36
- C 6:0: 0.23
- C 8:0: 0.13
- C 10:0: 0.28
- C 12:0: 0.39
- C 14:0: 1.92
- C 16:0: 19.05
- C 16:1: 2.24
- C 17:0: 0.06
- C 18:0: 10.14
- C 18:1: 30.45
- C 18:2: 6.53
- C 18:3: 0.75
- C 20:0: 0.02
- C 20:1: 0.01
- C 20:4: 1.19
- C 20:5: —
- C 22:6: —

**Cholesterol [mg/kg]**: 865

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>0.64</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.34</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.57</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.35</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.10</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.28</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.25</td>
</tr>
<tr>
<td>Valine</td>
<td>0.53</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.41</td>
</tr>
<tr>
<td>Leucine</td>
<td>0.77</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.42</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>0.83</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.16</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>1.75</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>0.58</td>
</tr>
<tr>
<td>Proline</td>
<td>0.90</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.26</td>
</tr>
<tr>
<td>Serine</td>
<td>0.46</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 153 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 30 µg
- Cobalamine (B₁₂): 153 mg
- Nicotinic acid: 49 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 300 µg
- Choline-Chloride: 1,015 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 138 mg
- Manganese: 81 mg
- Zinc: 51 mg
- Copper: 11 mg
- Iodine: 1.0 mg
- Selenium: 0.10 mg
- Cobalt: 0.11 mg

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Main products**

E15149-30  Meal (pasty)
ssniff® EF R/M with 10 % Fat

Experimental diet for rats and mice, saturated fatty acids, high contents of palmitic acid (C16:0)

Description
This experimental diet (purified) has medium high to high fat contents. The fatty acid composition is characterized by saturated FA with high palmitic acid concentrations.

Crude Nutrients [%]
- Dry matter: 96.8
- Crude protein (N x 6.25): 20.7
- Crude fat: 10.1
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 55.8
- Starch: 20.2
- Dextrins: 15.4
- Sugar: 18.3

Energy [MJ/kg]
- Gross Energy (GE): 19.7
- Metabolizable Energy (ME): 17.9 ¹)

Minerals [%]
- Calcium: 0.92
- Phosphorus: 0.62
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 6:0
- C 8:0
- C 10:0
- C 12:0
- C 14:0: 0.10
- C 16:0: 3.88
- C 16:1: 0.05
- C 17:0
- C 18:0: 0.48
- C 18:1: 3.63
- C 18:2: 1.44
- C 18:3: 0.10
- C 20:0: 0.05
- C 20:1
- C 20:4

Cholesterol [mg/kg] addition optional

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 1.02
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Feed composition
On request

Main products
E15162-30 Meal
E15162-34 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® EF R/M with 20 % Fat**

Experimental diet for rats and mice, saturated fatty acids, high contents of palmitic acid (C16:0)

**Description**
As a result of the high energy density due to fat supplementation (20 % CL), this experimental diet will induce obesity, when fed to satiation (ad libitum access); the high fat content with saturated FA, particularly the high palmitic acid concentration, may result in metabolic syndrome and diabetes type 2 (NIDDM).

**Crude Nutrients [%]**
- Dry matter: 96.2
- Crude protein (N x 6.25): 20.7
- **Crude fat**: 20.1
- Crude ash: 5.6
- N free extracts: 44.6
- Starch: 20.1
- Sugar: 18.3

**Energy [MJ/kg]**
- Gross Energy (GE): 21.9
- Metabolizable Energy (ME): 18.9

---

**Vitamins per kg**
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg

**Trace elements per kg**
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

---

**Minerals [%]**
- Calcium: 0.92
- Phosphorus: 0.62
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

**Fatty acids [%]**
- C 6:0: 0.21
- C 8:0: 8.35
- C 10:0: 0.10
- C 12:0: 0.96
- C 14:0: 7.45
- C 16:0: 2.02
- C 18:0: 0.10
- C 18:1: 0.10
- C 20:0: 0.10
- C 20:1: 0.10
- C 20:4: 0.10

**Cholesterol [mg/kg]**
- Addition optional

---

**Feed composition**
- On request

---

**Production and sale**
ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
[www.ssniff.de](http://www.ssniff.de) / [www.ssniff.com](http://www.ssniff.com)
ssniff® EF R/M with 20 % Fat

Experimental diet for rats and mice, saturated fatty acids, high contents of palmitic and stearic acid (C16:0/C18:0)

Description
As a result of the high energy density due to fat supplementation (20 % CL), this experimental diet will induce obesity, when fed to satiation (ad libitum access); this may result in metabolic syndrome and diabetes type 2 (NIDDM).

Crude Nutrients [%]
- Dry matter: 96.2
- Crude protein (N x 6.25): 20.7
- Crude fat: 20.1
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 44.6
- Starch: 20.1
- Sugar: 18.3

Energy [MJ/kg]
- Gross Energy (GE): 21.9
- Metabolizable Energy (ME): 18.9 (1)

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Minerals [%]
- Calcium: 0.92
- Phosphorus: 0.62
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 6:0: —
- C 8:0: —
- C10:0: —
- C12:0: —
- C14:0: 0.03
- C16:0: 5.01
- C16:1: 0.07
- C17:0: —
- C18:0: 6.89
- C18:1: 6.43
- C18:2: 0.40
- C18:3: 0.06
- C20:0: 0.20
- C20:1: —
- C20:4: —

Cholesterol [mg/kg] addition optional

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Feed composition
On request

Main products
- E15174-30 Meal
- E15174-34 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® EF R/M with 30 % Fat**

Experimental diet for rats and mice, saturated fatty acids, short to long chain fatty acids

---

**Description**

This experimental diet contains high amounts of fat (butter, coconut oil, palm oil, beef tallow) with mainly saturated fatty acids. Thus, the diet will induce obesity, when fed to satiation (ad libitum access); this may result in metabolic syndrome and diabetes type 2 (NIDDM).

---

### Crude Nutrients [\%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.3</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.8</td>
</tr>
<tr>
<td>Crude fat</td>
<td>30.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>34.6</td>
</tr>
<tr>
<td>Starch</td>
<td>16.3</td>
</tr>
<tr>
<td>Sugar/Dextrins</td>
<td>17.8</td>
</tr>
</tbody>
</table>

---

### Energy [MJ/kg]

- **Gross Energy (GE)**: 24.2
- **Metabolizable Energy (ME)**: 20.7

---

### Minerals [\%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.92</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.62</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

---

### Fatty acids [\%]

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td>0.12</td>
</tr>
<tr>
<td>C 6:0</td>
<td>0.11</td>
</tr>
<tr>
<td>C 8:0</td>
<td>0.50</td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.45</td>
</tr>
<tr>
<td>C 12:0</td>
<td>2.81</td>
</tr>
<tr>
<td>C 14:0</td>
<td>1.77</td>
</tr>
<tr>
<td>C 16:0</td>
<td>8.57</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.34</td>
</tr>
<tr>
<td>C 17:0</td>
<td>0.13</td>
</tr>
<tr>
<td>C 18:0</td>
<td>2.63</td>
</tr>
<tr>
<td>C 18:1</td>
<td>8.83</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.60</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.12</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.07</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:4</td>
<td>0.02</td>
</tr>
</tbody>
</table>

---

### Amino acids [\%]

- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 1.02
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

---

### Vitamins per kg

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

---

### Trace elements per kg

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

---

### Cholesterol [mg/kg] 171

(original content)

---

### Feed composition

**On request**

---

### Main products

- E15186-30 Meal
- E15186-34 10 mm pellets

---

**Production and sale**

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[www.ssniff.de](http://www.ssniff.de) / [www.ssniff.com](http://www.ssniff.com)

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors
**ssniff® EF R/M Protein free**

Experimental diet for rats and mice - without protein

### Description
This experimental diet for rats and mice contains - apart from traces (< 0.2 % CP) - not any protein and no undispensable amino acids. The feed can be therefore used in studies dealing with an absolute protein / amino acid deficiency. Also the metabolic effects of individual amino acids (e.g. tryptophan, phenylalanine), e.g. on the processes in different brain regions, can be studied, when added gradually to the diet or when applicated parenterally. Moreover, with protein deficient or free (carbohydrate rich) diets the hepatic fat metabolism can be affected, which may lead to a fat accretion in the hepatocytes.

### Crude Nutrients [%]
- Dry matter: 96.5
- **Crude protein** (N x 6.25): < 0.2
- Crude fat: 8.1
- Crude fibre: 12.0
- Crude ash: 5.3
- N free extracts: 71.0
- Starch: 56.2
- Sugar: 13.8

![Energy content diagram]

### Energy [MJ/kg]
- Gross Energy (GE): 18.1
- Metabolizable Energy (ME): 13.4

![Fatty acid composition diagram]

### Fatty acids [%]
- C 8:0: —
- C10:0: —
- C12:0: —
- C14:0: 0.02
- C16:0: 0.83
- C16:1: 0.04
- C18:0: 0.36
- C18:1: 2.08
- C18:2: 4.24
- C18:3: 0.52
- C20:0: 0.04
- C20:1: —
- C20:5: —
- C22:6: —

### Amino acids [%]
- Lysine: —
- Methionine: —
- Met+Cys: —
- Threonine: —
- Tryptophan: —
- Arginine: —
- Histidine: —
- Valine: —
- Isoleucine: —
- Leucine: —
- Phenylalanine: —
- Phe+Tyr: —
- Glycine: —
- Glutamic acid: —
- Aspartic acid: —
- Proline: —
- Alanine: —
- Serine: —

### Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 17 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 300 µg
- Choline-Chloride: 1,000 mg
- Inositol: 80 mg

### Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 58 mg
- Copper: 13 mg
- Iodine: 1.2 mg
- Selenium: 0.11 mg
- Cobalt: 0.12 mg

### Feed composition
**On request**

### Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
ssniff® EF R/M Protein deficient
Experimental diet for rats and mice - low protein

Description
This experimental diet provides only marginal (maintenance metabolism) or deficient (growing animals) amounts of protein and undispensable amino acids. Accordingly, in growing animals the effect of a deficient supply with protein or individual amino acids can be studied. Moreover, with that protein deficient, carbohydrate rich diet the hepatic fat metabolism can be affected, which may lead to a fat accretion in the hepatocytes.

Crude Nutrients [%]
- Dry matter 95.8
- Crude protein (N x 6.25) 8.8
- Crude fat 8.1
- Crude fibre 5.0
- Crude ash 5.5
- N free extracts 68.4
- Starch 56.1
- Sugar 10.9

Energy [MJ/kg]
- Gross Energy (GE) 18.3
- Metabolizable Energy (ME) 15.6 1)
- 16.0 2)

Amino acids [%]
- Lysine 0.71
- Methionine 0.36
- Met+Cys 0.40
- Threonine 0.39
- Tryptophan 0.11
- Arginine 0.32
- Histidine 0.27
- Valine 0.59
- Isoleucine 0.45
- Leucine 0.85
- Phenylalanine 0.46
- Phe+Tyr 0.93
- Glycine 0.18
- Glutamic acid 1.95
- Aspartic acid 0.65
- Proline 1.00
- Alanine 0.28
- Serine 0.52

Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 55 mg
- Folic acid 20 mg
- Biotin 300 µg
- Choline-Chloride 1,020 mg
- Inositol 80 mg

Trace elements per kg
- Iron 166 mg
- Manganese 98 mg
- Zinc 61 mg
- Copper 13 mg
- Iodine 1.2 mg
- Selenium 0.12 mg
- Cobalt 0.13 mg

Production and sale
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Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Feed composition
On request

Main products
E15202-20  Meal, single ground
E15202-24  10 mm pellets

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**Description**
The experimental diet provides excessive amounts of protein and amino acids; this may modify, particularly in certain mouse and rat strains, the intermediary metabolism of protein (amino acids) and carbohydrates. It should be noted that the feeding of excessive amounts of protein may lead to a transient depression of feed intake, which can be attributed to an alteration of the amino acid concentrations in the brain. It is therefore recommended to restrict the feed intake over around 3 days and to gradually increase the daily feed allowance.

**Crude Nutrients [%]**
- Dry matter: 94.2
- **Crude protein** (N x 6.25): 45.2
- Crude fat: 8.3
- Crude fibre: 5.0
- Crude ash: 6.0
- N free extracts: 35.4
- Starch: 19.1
- Sugar: 10.3

**Energy [MJ/kg]**
- Gross Energy (GE): 20.3

**Metabolizable Energy (ME)**
- 17.1 \(^1\)
  - 24% from Carbohydrates
  - 17% from Fat
- 15.7 \(^2\)
  - 32% from Carbohydrates
  - 48% from Protein

\(^1\) ME calculated according to the pig formula, Annex 4 of the German feed regulation
\(^2\) ME calculated with the Atwater factors

**Minerals [%]**
- Calcium: 0.90
- Phosphorus: 0.65
- Sodium: 0.20
- Magnesium: 0.21
- Potassium: 1.00

**Fatty acids [%]**
- C 8:0: —
- C 10:0: 0.01
- C 12:0: 0.01
- C 14:0: 0.05
- C 16:0: 0.90
- C 16:1: 0.05
- C 18:0: 0.38
- C 18:1: 2.14
- C 18:2: 4.24
- C 18:3: 0.52
- C 20:0: 0.04
- C 20:1: —
- C 20:5: —
- C 22:6: —

**Amino acids [%]**
- Lysine: 3.74
- Methionine: 1.47
- Met+Cys: 1.68
- Threonine: 2.03
- Tryptophan: 0.58
- Arginine: 1.66
- Histidine: 1.43
- Valine: 3.10
- Isoleucine: 2.37
- Leucine: 4.47
- Phenylalanine: 2.44
- Phe+Tyr: 4.86
- Glycine: 0.95
- Glutamic acid: 10.25
- Aspartic acid: 3.39
- Proline: 5.24
- Alanine: 1.49
- Serine: 2.71

**Vitamins per kg**
- Vitamin A: 15,000 IU
- Vitamin D\(_3\): 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B\(_1\)): 16 mg
- Riboflavin (B\(_2\)): 17 mg
- Pyridoxine (B\(_6\)): 18 mg
- Cobalamin (B\(_12\)): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 20 mg
- Biotin: 320 µg
- Choline-Chloride: 1,100 mg
- Inositol: 80 mg

**Trace elements per kg**
- Iron: 167 mg
- Manganese: 99 mg
- Zinc: 74 mg
- Copper: 15 mg
- Iodine: 1.2 mg
- Selenium: 0.19 mg
- Cobalt: 0.17 mg

**Production and sale**
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
[www.ssniff.de](http://www.ssniff.de) / [www.ssniff.com](http://www.ssniff.com)

**Main products**
- E15209-30 Meal, single ground
- E15209-34 10 mm pellets
**ssniff® EF R/M Glucose free, low CH**

Experimental diet for rats and mice - without glucose and low carbohydrate concentrations

### Description

This experimental diet is free from glucose and contains only low concentrations of available carbohydrates like sugar (sucrose), dextrines and starch. In return for it, the protein, fat and fibre contents has been increased to very high levels.

### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>94.4</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>52.5</td>
</tr>
<tr>
<td>Crude fat</td>
<td>11.3</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>19.9</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.2</td>
</tr>
<tr>
<td>N free extracts</td>
<td>4.5</td>
</tr>
<tr>
<td>Starch</td>
<td>0.9</td>
</tr>
<tr>
<td>Glucose</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Sucrose</td>
<td>&lt; 0.4</td>
</tr>
</tbody>
</table>

### Energy [MJ/kg]

- **Gross Energy (GE)** 21.8
- **Metabolizable Energy (ME)**
  - 13.8 \(^1\)
  - 13.8 \(^2\)

\(\text{ME calculated according to the pig formula, Annex 4 of the German feed regulation}\)

\(\text{ME calculated with the Atwater factors}\)

### Crude Nutrients [\%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>94.4</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>52.5</td>
</tr>
<tr>
<td>Crude fat</td>
<td>11.3</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>19.9</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.2</td>
</tr>
<tr>
<td>N free extracts</td>
<td>4.5</td>
</tr>
<tr>
<td>Starch</td>
<td>0.9</td>
</tr>
<tr>
<td>Glucose</td>
<td>&lt; 0.1</td>
</tr>
<tr>
<td>Sucrose</td>
<td>&lt; 0.4</td>
</tr>
</tbody>
</table>

\(\text{ME calculated according to the pig formula, Annex 4 of the German feed regulation}\)

\(\text{ME calculated with the Atwater factors}\)

### Amino acids [\%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>4.34</td>
</tr>
<tr>
<td>Methionine</td>
<td>1.68</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.93</td>
</tr>
<tr>
<td>Threonine</td>
<td>2.36</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.68</td>
</tr>
<tr>
<td>Arginine</td>
<td>1.94</td>
</tr>
<tr>
<td>Histidine</td>
<td>1.66</td>
</tr>
<tr>
<td>Valine</td>
<td>3.59</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>2.75</td>
</tr>
<tr>
<td>Leucine</td>
<td>5.18</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>2.82</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>5.63</td>
</tr>
<tr>
<td>Glycine</td>
<td>1.12</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>11.85</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>3.95</td>
</tr>
<tr>
<td>Proline</td>
<td>6.02</td>
</tr>
<tr>
<td>Alanine</td>
<td>1.76</td>
</tr>
<tr>
<td>Serine</td>
<td>3.14</td>
</tr>
</tbody>
</table>

### Vitamins [per kg]

- Vitamin A 15,000 IU
- Vitamin D\(\text{3}\) 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B\(\text{1}\)) 18 mg
- Riboflavin (B\(\text{2}\)) 17 mg
- Pyridoxine (B\(\text{6}\)) 17 mg
- Cobalamin (B\(\text{12}\)) 30 µg
- Nicotinic acid 50 mg
- Pantothenic acid 56 mg
- Folic acid 20 mg
- Biotin 340 µg
- Choline-Chloride 1,150 mg
- Inositol 80 mg

### Trace elements [per kg]

- Iron 174 mg
- Manganese 100 mg
- Zinc 77 mg
- Copper 15 mg
- Iodine 1.2 mg
- Selenium 0.2 mg
- Cobalt 0.2 mg

### Production and sale

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www.ssniff.de / www.ssniff.com

### Feed composition

**On request**

### Main products

E15660-20 Meal, single ground
E15660-24 10 mm pellets
**ssniff® EF R/M High glucose**

**Experimental diet for rats and mice - high glucose and dextrines concentrations**

**Description**

This experimental diet contains high amounts of available carbohydrates as sugars (glucose) and dextrines. The intestinal sugar transport as well as the intermediary fat and carbohydrate metabolism (e.g. gluconeogenesis) will be largely modified in the animal, especially in certain rat and mice strains, as a result of the increased intake of these carbohydrates.

### Crude Nutrients [\%]

- Dry matter: 95.8
- Crude protein (N x 6.25): 19.1
- Crude fat: 2.9
- Crude fibre: 3.0
- Crude ash: 5.6
- N free extracts: 66.4

**Glucose ≥ 50.0**

**Oligosaccharides/Dextrines ≥ 12.0**

---

**Energy**

- **Gross Energy (GE):** 17.9 MJ/kg
- **Metabolizable Energy (ME):** 15.9 \(^1\)

**Amino acids [\%]**

- Lysine: 1.57
- Methionine: 0.68
- Met+Cys: 0.96
- Threonine: 0.85
- Tryptophan: 0.24
- Arginine: 0.70
- Histidine: 0.60
- Valine: 1.30
- Isoleucine: 0.99
- Leucine: 1.87
- Phenylalanine: 1.02
- Phe+Tyr: 2.04
- Glycine: 0.40
- Glutamic acid: 4.30
- Aspartic acid: 1.42
- Proline: 2.20
- Alanine: 0.62
- Serine: 1.14

**Minerals [\%]**

- Calcium: 0.89
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.95

**Fatty acids [\%]**

- C 8:0: ---
- C10:0: ---
- C12:0: ---
- C14:0: 0.02
- C16:0: 0.32
- C16:1: 0.02
- C18:0: 0.14
- C18:1: 0.75
- C18:2: 1.49
- C18:3: 0.18
- C20:0: 0.01
- C20:1: ---
- C20:5: ---
- C22:6: ---

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D\(_3\): 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B\(_1\)): 16 mg
- Riboflavin (B\(_2\)): 17 mg
- Pyridoxine (B\(_6\)): 18 mg
- Cobalamin (B\(_12\)): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 20 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

---

**Feed composition**

*On request*

**Main products**

- E15629-30 Meal, single ground
- E15629-34 10 mm pellets

---

**Production and sale**

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E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

---

1 ME calculated according to the pig formula, Annex 4 of the German feed regulation
2 ME calculated with the Atwater factors
**ssniff® EF R/M High starch and sugar**

**Experimental diet for rats and mice - high starch and sugar contents**

**Description**

This experimental diet contains high amounts of available carbohydrates as sugars (mainly sucrose) and partially degraded starch. Accordingly, the intermediary fat and carbohydrate metabolism (e.g. gluconeogenesis) will be largely modified in the animal, especially in certain rat and mice strains, as a result of the increased intake of these carbohydrates; above all an increase of the PEPCK activity due to sucrose is expected.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.7</td>
</tr>
<tr>
<td>Crude protein</td>
<td>16.9</td>
</tr>
<tr>
<td>Crude fat</td>
<td>2.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>1.6</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>69.6</td>
</tr>
<tr>
<td>Starch</td>
<td>37.6</td>
</tr>
<tr>
<td>Sugar</td>
<td>30.3</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- **Gross Energy (GE)**: 17.4
- **Metabolizable Energy (ME)**: 15.9
  - 1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
- 2) ME calculated with the Atwater factors

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.89</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.95</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>8.9</td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 12:0</td>
<td>0.00</td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.23</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.14</td>
</tr>
<tr>
<td>C 18:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.06</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.13</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.00</td>
</tr>
<tr>
<td>C 20:5</td>
<td>0.00</td>
</tr>
<tr>
<td>C 22:6</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.39</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.61</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.69</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.75</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.22</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.62</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.53</td>
</tr>
<tr>
<td>Valine</td>
<td>1.15</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.88</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.66</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.91</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.81</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.35</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.81</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.26</td>
</tr>
<tr>
<td>Proline</td>
<td>1.95</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.55</td>
</tr>
<tr>
<td>Serine</td>
<td>1.01</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 17 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 20 mg
- Biotin: 300 µg
- Choline-Chloride: 1,030 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

**Feed composition**

*On request*

**Main products**

- E15630-30 Meal, single ground
- E15630-34 10 mm pellets

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
snniff® EF R/M  Induction of fatty liver

Experimental diet for rats and mice
for the induction of micro- and macrovesicular fatty liver

Description
This experimental diet supports the development of fatty liver, because of its composition and the nutrient concentrations, particularly due to a high carbohydrate content, marginal or deficient protein supply and low choline concentrations.

Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>90.4</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>7.7</td>
</tr>
<tr>
<td>Crude fat</td>
<td>3.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>1.8</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.0</td>
</tr>
<tr>
<td>N free extracts</td>
<td>69.8</td>
</tr>
<tr>
<td>Starch</td>
<td>66.7</td>
</tr>
<tr>
<td>Sugar</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Energy [MJ/kg]

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>16.2</td>
</tr>
<tr>
<td>Metabolizable Energy</td>
<td>14.7</td>
</tr>
</tbody>
</table>

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

Minerals [%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.97</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.65</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.18</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Fatty acids [%]

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C 10:0</td>
<td></td>
</tr>
<tr>
<td>C 12:0</td>
<td></td>
</tr>
<tr>
<td>C 14:0</td>
<td></td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.33</td>
</tr>
<tr>
<td>C 16:1</td>
<td></td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.06</td>
</tr>
<tr>
<td>C 18:1</td>
<td>0.77</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.65</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.03</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:1</td>
<td></td>
</tr>
<tr>
<td>C 20:5</td>
<td></td>
</tr>
<tr>
<td>C 22:6</td>
<td></td>
</tr>
</tbody>
</table>

Amino acids [%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>0.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.17</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.12</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.29</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.47</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.16</td>
</tr>
<tr>
<td>Lys : Met+Cys 1:</td>
<td>0.41</td>
</tr>
<tr>
<td>Lys : Thr 1:</td>
<td>0.66</td>
</tr>
<tr>
<td>Lys : Trp 1:</td>
<td>0.22</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.30</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.19</td>
</tr>
<tr>
<td>Valine</td>
<td>0.34</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.31</td>
</tr>
<tr>
<td>Leucine</td>
<td>0.87</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.32</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>0.53</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.20</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>1.23</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>0.46</td>
</tr>
<tr>
<td>Proline</td>
<td>0.57</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.42</td>
</tr>
<tr>
<td>Serine</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Vitamins per kg

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>105 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>5 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>15 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>21 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>100 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>76 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>32 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>6 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>340 µg</td>
</tr>
<tr>
<td>Choline-Cl (original)</td>
<td>410 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

Trace elements per kg

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>119 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>35 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>62 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>8 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>2.0 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.2 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>2.0 mg</td>
</tr>
</tbody>
</table>

Main products
E15650-90  Meal, single ground
E15650-94  10 mm pellets

Production and sale
snniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@snniff.de
www.ssniff.de / www.ssniff.com
Description
This purified methionine and choline deficient diet (MCD) contains some intact protein with very low methionine and choline concentrations. Thus, the feed will support the development of fatty liver; however, the feeding period required for the development of fatty livers depends largely on the previous nutrient supply and the mouse strain.

Crude Nutrients [%]
- Dry matter: 96.7
- Crude protein (N x 6.25): 13.0
- Crude fat: 6.1
- Crude fibre: 5.0
- Crude ash: 5.9
- N free extracts: 66.5
- Starch: 17.7
- Sugar/Dextrins: 50.1

Energy [MJ/kg]
- Gross Energy (GE): 18.5
- Metabolizable Energy (ME): 16.7

Amino acids [%]
- Lysine: 1.25
- Methionine: 0.14
- Cystine: 0.22
- Met+Cys: 0.36
- Threonine: 0.83
- Tryptophan: 0.28
- Lys : Met+Cys: 0.29
- Lys : Thr: 0.66
- Lys : Trp: 0.22
- Arginine: 0.95
- Histidine: 0.33
- Valine: 0.59
- Isoleucine: 0.58
- Leucine: 0.94
- Phenylalanine: 0.62
- Phe+Tyr: 1.03
- Glycine: 0.47
- Glutamic acid: 1.25
- Aspartic acid: 1.07
- Proline: 0.63
- Alanine: 0.43
- Serine: 0.66

Minerals [%]
- Calcium: 0.93
- Phosphorus: 0.69
- Sodium: 0.25
- Magnesium: 0.22
- Potassium: 0.98

Fatty acids [%]
- C 8:0: —
- C10:0: —
- C12:0: —
- C14:0: 0.02
- C16:0: 0.62
- C16:1: 0.03
- C18:0: 0.27
- C18:1: 1.56
- C18:2: 3.18
- C18:3: 0.39
- C20:0: 0.03
- C20:1: —
- C20:5: —
- C22:6: —

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Thiamin: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 16 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 50 mg
- Pantothentic acid: 56 mg
- Folic acid: 20 mg
- Biotin: 340 µg
- Choline-Cl (original): <100 mg
- Inositol: 100 mg

Trace elements per kg
- Iron: 229 mg
- Manganese: 98 mg
- Zinc: 63 mg
- Copper: 15 mg
- Iodine: 1.22 mg
- Selenium: 0.13 mg
- Cobalt: 0.14 mg

Feed composition
On request

Main products
E15651-90 Meal
E15651-94 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® EF R/M, high fat MCD mod.**

Experimental diet for rats and mice for the induction of fatty liver

**Description**
This purified methionine/choline deficient diet (MCD) with high fat contents (middle chain, saturated fatty acids) bases on some intact protein with very low methionine and choline concentrations. Thus, the feed will support the development of fatty liver; however, the feeding period required for the development of fatty livers depends largely on the previous nutrient supply and the mouse strain.

### Crude Nutrients [%]
- **Dry matter**: 96.8
- **Crude protein (N x 6.25)**: 12.9
- **Crude fat**: 15.1
- **Crude fibre**: 5.0
- **Crude ash**: 5.9
- **N free extracts**: 57.8
- **Starch**: 14.1
- **Sugar/Dextrins**: 45.1

### Energy [MJ/kg]
- **Gross Energy (GE)**: 20.6
- **Metabolizable Energy (ME) 1) 18.2**
- **Metabolizable Energy (ME) 2) 17.9**

### Crude Nutrients [%]
- **Dry matter**: 96.8
- **Crude protein (N x 6.25)**: 12.9
- **Crude fat**: 15.1
- **Crude fibre**: 5.0
- **Crude ash**: 5.9
- **N free extracts**: 57.8
- **Starch**: 14.1
- **Sugar/Dextrins**: 45.1

### Amino acids [%]
- **Lysine**: 1.25
- **Methionine**: 0.14
- **Cystine**: 0.21
- **Met+Cys**: 0.35
- **Threonine**: 0.82
- **Tryptophan**: 0.27
- **Lys : Met+Cys 1)**: 0.28
- **Lys : Thr 1)**: 0.66
- **Lys : Trp 1)**: 0.22
- **Arginine**: 0.93
- **Histidine**: 0.32
- **Valine**: 0.59
- **Isoleucine**: 0.58
- **Leucine**: 0.93
- **Phenylalanine**: 0.61
- **Phe+Tyr**: 1.02
- **Glycine**: 0.47
- **Glutamic acid**: 1.24
- **Aspartic acid**: 1.06
- **Proline**: 0.62
- **Alanine**: 0.43
- **Serine**: 0.66

### Minerals [%]
- **Calcium**: 0.93
- **Phosphorus**: 0.69
- **Sodium**: 0.25
- **Magnesium**: 0.22
- **Potassium**: 0.98

### Fatty acids [%]
- **C 6:0**: 0.07
- **C 8:0**: 0.91
- **C 10:0**: 0.72
- **C 12:0**: 5.39
- **C 14:0**: 2.07
- **C 16:0**: 1.34
- **C 16:1**: 0.02
- **C 18:0**: 0.47
- **C 18:1**: 1.59
- **C 18:2**: 1.81
- **C 18:3**: 0.20
- **C 20:0**: 0.02
- **C 20:1**: —
- **C 20:5**: —
- **C 22:6**: —

### Vitamins per kg
- **Vitamin A**: 15,000 IU
- **Vitamin D₃**: 1,500 IU
- **Vitamin E**: 150 mg
- **Vitamin K (as menadione)**: 20 mg
- **Thiamin**: 30 mg
- **Thiamin (B₁)**: 16 mg
- **Riboflavin (B₂)**: 16 mg
- **Pyridoxine (B₆)**: 16 mg
- **Cobalamin (B₁₂)**: 30 μg
- **Nicotinic acid**: 50 mg
- **Pantothenic acid**: 50 mg
- **Biotin**: 340 μg
- **Choline-Cl (original)**: <100 mg
- **Inositol**: 100 mg

### Trace elements per kg
- **Iron**: 228 mg
- **Manganese**: 98 mg
- **Zinc**: 63 mg
- **Copper**: 15 mg
- **Iodine**: 1.22 mg
- **Selenium**: 0.13 mg
- **Cobalt**: 0.14 mg

### Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® EF R/M Vitamin A deficient
Experimental diet for rats and mice, without vitamin A addition

Description
This purified diet was not supplemented with vitamin A; it is therefore suitable for the induction of a nutritional hypovitaminosis A (clinical manifest vitamin A deficiency). Conventional feeds contain high amounts of vitamin A (15,000 - 25,000 IU/kg), so that the retinol concentrations in the stores of the animals may contribute to a large extent to meet the animal’s demands in times of dietary vitamin A shortage. It is therefore recommended to feed this diet in the long-term to achieve a phenotypic manifestation of the vitamin A deficiency; the feeding period can be reduced, if a diet low in vitamin A is fed to the dams during pregnancy and lactation.

Crude Nutrients [%]
- Dry matter: 95.0
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 58.6
- Starch: 46.8
- Sugar: 10.8

Energy [MJ/kg]
- Gross Energy (GE): 18.0
- Metabolizable Energy (ME): 15.4

Vitamins per kg
- Vitamin A *: < 120 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: —
- C10:0: —
- C12:0: —
- C14:0: 0.02
- C16:0: 0.45
- C16:1: 0.22
- C18:0: 0.19
- C18:1: 1.07
- C18:2: 2.12
- C18:3: 0.26
- C20:0: 0.02
- C20:1: —
- C20:5: —
- C22:6: —

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Alanine: 0.68
- Serine: 1.24

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Feed composition
On request

Main products
E15311-10 Meal, single ground
E15311-14 10 mm pellets

* correspond to retinol < 36 µg
β-carotene < 1.1 mg

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® EF R/M Vitamin D₃ deficient
Experimental diet for rats and mice, without vitamin D₃ addition

Description
This vitamin D₃ deficient diet has also low calcium and phosphorus concentrations with normal Ca/P ratio (around 1.5:1). Thus, the effect of a combined Ca/P and vitamin D₃ deficiency can be studied. It is also possible to investigate the effect of an increasing vitamin D or mineral supply on animal health. The diet may be also used in osteoporosis studies.

Crude Nutrients [%]
- Dry matter: 95.1
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 4.0
- N free extracts: 61.2
- Starch: 46.8
- Sugar: 12.9

Energy [MJ/kg]
- Gross Energy (GE): 18.0
- Metabolizable Energy (ME): 15.4¹)

Minerals [%]
- Calcium: 0.34
- Phosphorus: 0.22
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.45
- C 16:1: 0.02
- C 18:0: 0.19
- C 18:1: 1.07
- C 18:2: 2.12
- C 18:3: 0.26
- C 20:0: 0.02
- C 20:1: —
- C 20:5: —
- C 22:6: —

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Valine: 1.42
- Valine: 1.42
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃*: < 5 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

¹) ME calculated according to the pig formula, Annex 4 of the German feed regulation
²) ME calculated with the Atwater factors

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com

* correspond to calciferol < 0.13 µg

Feed composition
On request

Main products
E15312-10 Meal / powder
E15312-14 10 mm pellets
**ssniff® EF R/M Vitamin D₃ deficient**

Experimental diet for rats and mice, without vitamin D₃ addition

**Description**
This vitamin D₃ deficient diet contains normal calcium and phosphorus concentrations with normal Ca/P ratio (around 1.5:1). Thus, the effects of a vitamin D₃ deficiency on bone metabolism and animal health can be studied. The time taken until deficiency symptoms become visible depends on the previous dietary supply with vitamin D.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.1</td>
</tr>
<tr>
<td>Crude protein</td>
<td>20.8</td>
</tr>
<tr>
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<tr>
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<td>4.0</td>
</tr>
<tr>
<td>N free extracts</td>
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</tr>
<tr>
<td>Starch</td>
<td>46.8</td>
</tr>
<tr>
<td>Sugar</td>
<td>12.9</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

<table>
<thead>
<tr>
<th>Description</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>18.0</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td></td>
</tr>
<tr>
<td>1)</td>
<td>15.4</td>
</tr>
<tr>
<td>2)</td>
<td>15.0</td>
</tr>
</tbody>
</table>

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

**Crude Nutrients [%]**

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</tr>
<tr>
<td>Sugar</td>
<td>12.9</td>
</tr>
</tbody>
</table>

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C 10:0</td>
<td></td>
</tr>
<tr>
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<tr>
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<td>0.02</td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.45</td>
</tr>
<tr>
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<td>0.02</td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.19</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.07</td>
</tr>
<tr>
<td>C 18:2</td>
<td>2.12</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.26</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:1</td>
<td></td>
</tr>
<tr>
<td>C 20:5</td>
<td></td>
</tr>
<tr>
<td>C 22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.73</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.93</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.27</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.76</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.66</td>
</tr>
<tr>
<td>Valine</td>
<td>1.42</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.09</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.05</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.11</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.22</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.43</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.69</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.55</td>
</tr>
<tr>
<td>Proline</td>
<td>2.39</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.68</td>
</tr>
<tr>
<td>Serine</td>
<td>1.24</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>IU/µg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000</td>
</tr>
<tr>
<td>Vitamin D₃ *</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>20</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>18</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>49</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>56</td>
</tr>
<tr>
<td>Folic acid</td>
<td>19</td>
</tr>
<tr>
<td>Biotin</td>
<td>310</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040</td>
</tr>
<tr>
<td>Inositol</td>
<td>80</td>
</tr>
</tbody>
</table>

**Trace elements per kg**

<table>
<thead>
<tr>
<th>Trace element</th>
<th>mg/µg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166</td>
</tr>
<tr>
<td>Manganese</td>
<td>98</td>
</tr>
<tr>
<td>Zinc</td>
<td>65</td>
</tr>
<tr>
<td>Copper</td>
<td>14</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.15</td>
</tr>
</tbody>
</table>

* correspond to calciferol

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Main products**

E15312-20  Meal / powder
E15312-24  10 mm pellets

*correspond to calciferol*
### Description

With that experimental diet a calcinosis can be induced, which becomes obvious in a calcification of the intima of the vessels and some organs. Moreover, it is also possible to supplement the diet with warfarin in a medium-high dosage. Warfarin endogenously inhibits the formation of the Ca-binding amino acid derivative γ-carboxyglutamic acid (Gla) or the γ-carboxylation of the matrix Gla protein, which is secreted by the vascular smooth muscles and by the arterial macrophages and which inhibits calcification processes. Accordingly, warfarin administration promotes the rapid formation of arterial calcification plaques. A simultaneous dietary administration of vitamin K₁ in high concentrations prevents a disturbance of blood clotting. Vitamin K₁ only neutralizes the warfarin effect in the liver (formation of the blood clotting factors), but not in the other extrahepatic tissues, so that the calcification will be promoted while maintaining a physiological prothrombin time.

### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.1</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.8</td>
</tr>
<tr>
<td>Crude fat</td>
<td>4.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>7.5</td>
</tr>
<tr>
<td>N free extracts</td>
<td>57.7</td>
</tr>
<tr>
<td>Starch</td>
<td>45.0</td>
</tr>
<tr>
<td>Sugar</td>
<td>10.7</td>
</tr>
</tbody>
</table>

### Energy [MJ/kg]

- **Gross Energy (GE)**: 17.7
- **Metabolizable Energy (ME)**:
  - 15.1 ¹)
  - 14.7 ²)

### Fatty acids [%]

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C8:0</td>
<td></td>
</tr>
<tr>
<td>C10:0</td>
<td></td>
</tr>
<tr>
<td>C12:0</td>
<td></td>
</tr>
<tr>
<td>C14:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C16:0</td>
<td>0.45</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C18:0</td>
<td>0.19</td>
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<tr>
<td>C18:1</td>
<td>1.07</td>
</tr>
<tr>
<td>C18:2</td>
<td>2.12</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.26</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C20:1</td>
<td></td>
</tr>
<tr>
<td>C20:5</td>
<td></td>
</tr>
<tr>
<td>C22:6</td>
<td></td>
</tr>
</tbody>
</table>

### Amino acids [%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.73</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.93</td>
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<tr>
<td>Tryptophan</td>
<td>0.27</td>
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<td>Arginine</td>
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<td>Isoleucine</td>
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<tr>
<td>Serine</td>
<td>1.24</td>
</tr>
</tbody>
</table>

### Vitamins per kg

- Vitamin A: 15,000 IU
- **Vitamin D₃**: 76,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

### Trace elements per kg

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

* corresponds to calciferol 1,900 µg

**Production and sale**

ssniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Main products**

E15312-40 Meal, single ground
E15312-44 10 mm pellets
ssniff® EF R/M  Vitamin E deficient
Experimental diet for rats and mice deficient in vitamin E, only for short-term studies

Description
With that experimental diet it is possible to induce vitamin E deficiency symptoms in rats and mice, if the animals have already a low endogeneous vitamin E status. It should be noted that this feed was designed only for short-term studies, because of the very low dietary concentrations of the essential fatty acids, that may result in diseases caused by the fatty acid deficiency.

Crude Nutrients [%]
- Dry matter: 95.1
- Crude protein (N x 6.25): 20.8
- Crude fat: 3.2
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 60.3
- Starch: 46.9
- Sugar: 11.9

Energy [MJ/kg]
- Gross Energy (GE): 17.8
- Metabolizable Energy (ME): 15.3

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: 0.23
- C10:0: 0.18
- C12:0: 1.35
- C14:0: 0.53
- C16:0: 0.29
- C16:1: —
- C18:0: 0.09
- C18:1: 0.23
- C18:2: 0.05
- C18:3: —
- C20:0: —
- C20:1: —
- C20:5: —
- C22:6: —

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
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- Aspatic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: < 10 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
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- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Main products
- E15313-20  Meal, single ground
- E15313-24  10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

63 % from Carbohydrates
30 % from Protein
7 % from Protein
68 % from Carbohydrates
24 % from Protein
8 % from Fat
20 % from Fat
63 % from Carbohydrates
ssniff® EF R/M  Vitamin E deficient
Experimental diet for rats and mice
deficient in vitamin E, for long-term studies

Description
This experimental diet can be fed in the long-term, because of its relative high fatty acid contents; it is therefore possible to achieve a nearly complete vitamin E depletion in rats and mice. It is assumed, that clinically manifest symptoms and macroscopic or microscopic damages in the animal associated with the vitamin E deficiency may only occur after a long feeding interval. The addition of oxidized fatty acids may promote the the development of symptoms.

Crude Nutrients [%]
- Dry matter: 95.2
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 5.7
- N free extracts: 59.3
- Starch: 45.5
- Sugar: 12.2

Energy [MJ/kg]
- Gross Energy (GE): 18.0
- Metabolizable Energy (ME) 15.4 ¹)
  - 15.0 ²)

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: 0.15
- C10:0: 0.12
- C12:0: 0.90
- C14:0: 0.36
- C16:0: 0.42
- C16:1 —
- C18:0: 0.10
- C18:1: 0.68
- C18:2: 1.14
- C18:3: 0.02
- C20:0: 0.01
- C20:1 —
- C20:5 —
- C22:6 —

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- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
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- Vitamin D₃*: 1,500 IU
- Vitamin E < 10 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

¹) ME calculated according to the pig formula, Annex 4 of the German feed regulation
²) ME calculated with the Atwater factors

Feed composition
On request

Main products
E15314-20  Meal, single ground
E15314-24  10 mm pellets
**ssniff® EF R/M Thiamin deficient**

Experimental diet for rats and mice without thiamin (Vitamin B₁)

**Description**

In this experimental diet thiamin (Vitamin B₁) was not supplemented. It is therefore ideal for the induction of a thiamin deficiency in rats and mice. The time needed to observe the first clinical symptoms in the animals varies and depends also with water soluble vitamins to some extent on the previous dietary history, i.e. thiamin supply.

**Crude Nutrients [\%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.8</td>
</tr>
<tr>
<td>Crude fat</td>
<td>4.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>58.6</td>
</tr>
<tr>
<td>Starch</td>
<td>46.8</td>
</tr>
<tr>
<td>Sugar</td>
<td>10.8</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>18.0</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>15.0</td>
</tr>
</tbody>
</table>

**Minerals [\%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Chain</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>—</td>
</tr>
<tr>
<td>C 10:0</td>
<td>—</td>
</tr>
<tr>
<td>C 12:0</td>
<td>—</td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.45</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.19</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.07</td>
</tr>
<tr>
<td>C 18:2</td>
<td>2.12</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.26</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:1</td>
<td>—</td>
</tr>
<tr>
<td>C 20:5</td>
<td>—</td>
</tr>
<tr>
<td>C 22:6</td>
<td>—</td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.73</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.93</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.27</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.76</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.66</td>
</tr>
<tr>
<td>Valine</td>
<td>1.42</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.09</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.05</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.11</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.22</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.43</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.69</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.55</td>
</tr>
<tr>
<td>Proline</td>
<td>2.39</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.68</td>
</tr>
<tr>
<td>Serine</td>
<td>1.24</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>&lt; 1 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>49 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>56 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>19 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>310 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

**Trace elements per kg**

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>65 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.15 mg</td>
</tr>
</tbody>
</table>

**Feed composition**

*On request*

**Main products**

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E15321-20</td>
<td>Meal, single ground</td>
</tr>
<tr>
<td>E15321-24</td>
<td>10 mm pellets</td>
</tr>
</tbody>
</table>

**Production and sale**

ssniff Spezialitäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.sssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® EF R/M  Sodium deficient
Experimental diet for rats and mice, low sodium content

Description
This experimental diet contains no sodium chloride supplementation, resulting in very low sodium concentrations. It can be therefore used for the induction of a sodium deficiency, whereas an adequate chloride supply is ensured by addition of other mineral compounds. The purified diet can be also used in dose-response-studies as a base mixture with gradual increasing Na additions.

Crude Nutrients [%]
- Dry matter: 95.0
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 5.0
- N free extracts: 60.0
- Starch: 46.8
- Sugar: 11.3

Energy [MJ/kg]
- Gross Energy (GE): 18.1
- Metabolizable Energy (ME): 15.5

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: < 0.03
- Chloride: 0.18
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.45
- C 16:1: 0.02
- C 18:0: 0.19
- C 18:1: 1.07
- C 18:2: 2.12
- C 18:3: 0.26
- C 20:0: 0.02
- C 20:1: —
- C 20:5: —
- C 22:6: —

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Main products
E15430-20  Meal, single ground
E15430-24  10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Footnotes:
1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® EF R/M High Sodium
Experimental diet for rats and mice, high sodium content, with 4 % NaCl

Description
The sodium content of that experimental diet is increased to a high level by salt addition. The diet is accordingly suitable for studies dealing with hypertension in the field of cardiology/pulmology and nephrology.

Crude Nutrients [%]
- Dry matter 95.0
- Crude protein (N x 6.25) 20.8
- Crude fat 4.2
- Crude fibre 5.0
- Crude ash 9.4
- N free extracts 55.7
- Starch 43.1
- Sugar 10.7

Energy [MJ/kg]
- Gross Energy (GE) 17.4
- Metabolizable Energy (ME) 14.8 1)

Minerals [%]
- Calcium 0.90
- Phosphorus 0.63
- Sodium 1.71
- Chloride 2.60
- Magnesium 0.21
- Potassium 0.97

Fatty acids [%]
- C 8:0 —
- C10:0 —
- C12:0 —
- C14:0 0.02
- C16:0 0.45
- C16:1 0.02
- C18:0 0.19
- C18:1 1.07
- C18:2 2.12
- C18:3 0.26
- C20:0 0.02
- C20:1 —
- C20:5 —
- C22:6 —

Amino acids [%]
- Lysine 1.71
- Methionine 0.73
- Met+Cys 0.82
- Threonine 0.93
- Tryptophan 0.27
- Arginine 0.76
- Histidine 0.66
- Valine 1.42
- Isoleucine 1.09
- Leucine 2.05
- Phenylalanine 1.11
- Phe+Tyr 2.22
- Glycine 0.43
- Glutamic acid 4.69
- Aspartic acid 1.55
- Proline 2.39
- Alanine 0.68
- Serine 1.24

Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 56 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 1,040 mg
- Choline-Chloride 1,040 mg
- Inositol 80 mg

Trace elements per kg
- Iron 166 mg
- Manganese 98 mg
- Zinc 65 mg
- Copper 14 mg
- Iodine 1.2 mg
- Selenium 0.14 mg
- Cobalt 0.15 mg

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Main products
- E15431-30 Meal, single ground
- E15431-34 10 mm pellets

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® EF R/M Sodium Excess
Experimental diet for rats and mice, high sodium content, with 10 % NaCl (4% sodium)

**Description**
In this experimental diet the sodium content is increased to a very high level by salt addition. The diet is accordingly suitable for studies dealing with hypertension in the field of cardiology/pulmology and nephrology.

**Crude Nutrients [%]**
- Dry matter: 95.0
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 15.2
- N free extracts: 50.0
- Starch: 37.5
- Sugar: 10.6

**Energy [MJ/kg]**
- Gross Energy (GE): 16.4
- Metabolizable Energy (ME): 13.8
  1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
  2) ME calculated with the Atwater factors

**Minerals [%]**
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 4.03
- Chloride: 6.08
- Magnesium: 0.21
- Potassium: 0.97

**Fatty acids [%]**
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.45
- C 16:1: 0.02
- C 18:0: 0.19
- C 18:1: 1.07
- C 18:2: 2.12
- C 18:3: 0.26
- C 20:0: 0.02
- C 20:1: —
- C 20:5: —
- C 22:6: —

**Amino acids [%]**
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

**Vitamins**
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

**Trace elements per kg**
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

**Feed composition**
On request

**Main products**
- E15432-40 Meal, single ground
- E15432-44 10 mm pellets

**Production and sale**
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
**Description**

This experimental diet contains no magnesium compound, resulting in deficient dietary magnesium concentrations, which come only from the feed ingredients. The mixture can therefore be used for experiments, in which Mg deficiency symptoms or the Mg requirement should be studied. However, with small modifications the diet can also be applied to other scientific questions, e.g., in studies dealing with diabetes type II or with cardiovascular disorders.

### Crude Nutrients [%]
- Dry matter: 95.2
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 4.9
- N free extracts: 60.2
- Starch: 46.8
- Sugar: 11.5

### Energy [MJ/kg]
- Gross Energy (GE): 18.2
- Metabolizable Energy (ME): 15.5

**1) ME calculated according to the pig formula, Annex 4 of the German feed regulation**

**2) ME calculated with the Atwater factors**

### Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- **Magnesium**: < 0.02
- Potassium: 0.97

### Fatty acids [%]
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.45
- C 16:1: 0.02
- C 18:0: 0.19
- C 18:1: 1.07
- C 18:2: 2.12
- C 18:3: 0.26
- C 20:0: 0.02
- C 20:1: —
- C 20:5: —
- C 22:6: —

### Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Tryptophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

### Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

### Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

---

**Production and sale**

ssniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

---

**Main products**

E15440-20 Meal, single ground
E15440-24 10 mm pellets
**Description**

This experimental diet contains no manganese compound. The diet can be therefore used for experiments, in which direct or indirect Mn deficiencies should be studied. Moreover, the feed may also serve a base mixture in dose-response-studies or in experiments, in which certain imaging techniques (cancer research) will be applied.

**Crude Nutrients**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.2</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.4</td>
</tr>
<tr>
<td>Crude fat</td>
<td>5.7</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.1</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>63.6</td>
</tr>
<tr>
<td>Starch</td>
<td>51.0</td>
</tr>
<tr>
<td>Sugar</td>
<td>10.8</td>
</tr>
</tbody>
</table>

**Energy**

- **Gross Energy (GE)** 18.1 MJ/kg
- **Metabolizable Energy (ME)** 16.1 1)

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

**Minerals**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Fatty acids**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>-----</td>
</tr>
<tr>
<td>C 10:0</td>
<td>-----</td>
</tr>
<tr>
<td>C 12:0</td>
<td>-----</td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.60</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.03</td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.26</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.46</td>
</tr>
<tr>
<td>C 18:2</td>
<td>2.92</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.36</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C 20:1</td>
<td>-----</td>
</tr>
<tr>
<td>C 20:5</td>
<td>-----</td>
</tr>
<tr>
<td>C 22:6</td>
<td>-----</td>
</tr>
</tbody>
</table>

**Amino acids**

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.43</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.62</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.70</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.77</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.63</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.55</td>
</tr>
<tr>
<td>Valine</td>
<td>1.18</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.90</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.93</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.85</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.90</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.29</td>
</tr>
<tr>
<td>Proline</td>
<td>2.00</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.03</td>
</tr>
</tbody>
</table>

**Vitamins**

- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 56 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 1,040 mg
- Inositol 80 mg

**Trace elements**

<table>
<thead>
<tr>
<th>Element</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>165 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>≤ 3 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>64 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.15 mg</td>
</tr>
</tbody>
</table>

**Production and sale**

ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Feed composition**

On request

**Main products**

E15520-20 Meal, single ground
E15520-24 10 mm pellets
snniff® EF R/M Manganese deficient (II)

Experimental diet for rats and mice, low manganese content

Description
This experimental diet contains no manganese compound. The diet can be therefore used for experiments, in which direct or indirect Mn deficiencies should be studied. Moreover, the feed may also serve a base mixture in dose-response-studies or in experiments, in which certain imaging techniques (cancer research) will be applied.

<table>
<thead>
<tr>
<th>Crude Nutrients</th>
<th>[%]</th>
<th>Energy</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.0</td>
<td>Gross Energy (GE)</td>
<td>18.1</td>
</tr>
</tbody>
</table>
| Crude protein (N x 6.25) | 20.8  | Metabolizable Energy (ME) | 15.4  
| Crude fat                | 4.2   |        |         |
| Crude fibre              | 5.0   |        |         |
| Crude ash                | 5.6   |        |         |
| N free extracts          | 59.4  |        |         |
| Starch                   | 46.8  |        |         |
| Sugar                    | 10.8  |        |         |

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

<table>
<thead>
<tr>
<th>Minerals</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.90</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fatty acids</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>-----</td>
</tr>
<tr>
<td>C10:0</td>
<td>-----</td>
</tr>
<tr>
<td>C12:0</td>
<td>-----</td>
</tr>
<tr>
<td>C14:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C16:0</td>
<td>0.45</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C18:0</td>
<td>0.19</td>
</tr>
<tr>
<td>C18:1</td>
<td>1.07</td>
</tr>
<tr>
<td>C18:2</td>
<td>2.12</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.26</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C20:1</td>
<td>-----</td>
</tr>
<tr>
<td>C20:5</td>
<td>-----</td>
</tr>
<tr>
<td>C22:6</td>
<td>-----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amino acids</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.73</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.93</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.27</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.76</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.66</td>
</tr>
<tr>
<td>Valine</td>
<td>1.42</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.09</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.05</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.11</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.22</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.43</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.69</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.55</td>
</tr>
<tr>
<td>Proline</td>
<td>2.39</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.68</td>
</tr>
<tr>
<td>Serine</td>
<td>1.24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vitamins</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D&lt;sub&gt;3&lt;/sub&gt;</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30 mg</td>
</tr>
<tr>
<td>Thiamin (B&lt;sub&gt;1&lt;/sub&gt;)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B&lt;sub&gt;2&lt;/sub&gt;)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B&lt;sub&gt;6&lt;/sub&gt;)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Cobalamine (B&lt;sub&gt;12&lt;/sub&gt;)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>49 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>56 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>19 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>310 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trace elements</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>≤ 4 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>65 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.15 mg</td>
</tr>
</tbody>
</table>

Feed composition
On request

Main products
E15530-20 Meal, single ground
E15530-24 10 mm pellets

Production and sale
snniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax:  +49-(0)2921-9658-40
E-Mail mail@snniff.de
www.snniff.de / www.snniff.com
**ssniff® EF R/M  Iron deficient**

**Experimental diet for rats and mice, low iron content**

### Description

This experimental diet, which bases on milk protein (Fe deficient), is not supplemented with iron compounds, resulting in very low dietary iron concentrations. The diet can be therefore used in experiments, in which a microcytic hypochromic anemia should be induced. Moreover, the feed can also serve a base mixture for dose-response-studies.

### Crude Nutrients

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>94.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.3</td>
</tr>
<tr>
<td>Crude fat</td>
<td>5.6</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>62.5</td>
</tr>
<tr>
<td>Starch</td>
<td>52.7</td>
</tr>
<tr>
<td>Sugar</td>
<td>10.8</td>
</tr>
</tbody>
</table>

### Energy

<table>
<thead>
<tr>
<th>Energy</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>18.3</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>16.4</td>
</tr>
</tbody>
</table>

### Metabolizable Energy (ME)

- 65% from Carbohydrates
- 23% from Protein
- 12% from Fat

### Crude Nutrients

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude protein</td>
<td>17.3</td>
</tr>
<tr>
<td>Crude fat</td>
<td>5.6</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>62.5</td>
</tr>
<tr>
<td>Starch</td>
<td>52.7</td>
</tr>
<tr>
<td>Sugar</td>
<td>10.8</td>
</tr>
</tbody>
</table>

### Amino acids

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.43</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.62</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.70</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.77</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.22</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.63</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.55</td>
</tr>
<tr>
<td>Valine</td>
<td>1.18</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.90</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.93</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.85</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.90</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.29</td>
</tr>
<tr>
<td>Proline</td>
<td>2.00</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.03</td>
</tr>
</tbody>
</table>

### Vitamins

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>49 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>56 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>19 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>310 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

### Trace elements

<table>
<thead>
<tr>
<th>Element</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>&lt; 10 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>64 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.14 mg</td>
</tr>
</tbody>
</table>

### Feed composition

- **On request**

### Main products

- E15510-20 Meal, single ground
- E15510-24 10 mm pellets

### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
[www.ssniff.de](http://www.ssniff.de) / [www.ssniff.com](http://www.ssniff.com)
ssniff® EF R/M  Selenium deficient
Experimental diet for rats and mice, low Se content

Description
This experimental diet which bases on an amino acid supplemented Torula yeast (Se deficient) contains not any selenium compound, resulting in very low dietary Se concentrations. The diet can be therefore used for the selenium depletion of rats and mice. Moreover, the feed can also serve a base mixture for dose-response-studies.

Crude Nutrients [\%]
- Dry matter 95.8
- Crude protein (N x 6.25) 15.5
- Crude fat 8.1
- Crude fibre 4.0
- Crude ash 5.5
- N free extracts 59.4
- Starch 2.1
- Dextrins 11.5
- Sugar 41.1

Energy [MJ/kg]
- Gross Energy (GE) 18.9
- Metabolizable Energy (ME) 15.4

Minerals [\%]
- Calcium 0.92
- Phosphorus 0.76
- Sodium 0.15
- Magnesium 0.14
- Potassium 1.10

Fatty acids [\%]
- C 8:0 0.02
- C 10:0 0.00
- C 12:0 0.00
- C 14:0 0.22
- C 16:0 0.45
- C 16:1 0.02
- C 18:0 0.19
- C 18:1 1.07
- C 18:2 2.12
- C 18:3 0.26
- C 20:0 0.02
- C 20:1 0.00
- C 20:5 0.00
- C 22:6 0.00

Amino acids [\%]
- Lysine 1.31
- Methionine 0.50
- Met+Cys 0.90
- Threonine 0.85
- Tryptophan 0.25
- Arginine 0.75
- Histidine 0.35
- Valine 0.78
- Isoleucine 0.75
- Leucine 0.76
- Phenylalanine 0.70
- Phe+Tyr 1.19
- Glycine 0.61
- Glutamic acid 2.02
- Aspartic acid 1.04
- Proline 0.67
- Alanine 0.69
- Serine 0.75

Vitamins per kg
- Vitamin A 4,000 IU
- Vitamin D₃ 1,000 IU
- Vitamin E 75 mg
- Vitamin K (as menadione) 4 mg
- Thiamin (B₁) 14 mg
- Riboflavin (B₂) 29 mg
- Pyridoxine (B₆) 17 mg
- Cobalamin (B₁₂) 28 µg
- Nicotinic acid 165 mg
- Pantothenic acid 38 mg
- Folic acid 8 mg
- Biotin 360 µg
- Choline-Chloride 1,090 mg

Trace elements per kg
- Iron 110 mg
- Manganese 25 mg
- Zinc 62 mg
- Copper 14 mg
- Iodine 0.26 mg
- Selenium < 0.06 mg
- Cobalt 0.02 mg

Feed composition
On request

Main products
E15540-20  Meal
E15540-24  10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
snniff® EF R/M  Iodine deficient
Experimental diet for rats and mice, low iodine content

Description
In Western and Central Europe subclinical iodine deficiency in humans is still an endemic disorder. This diet, which contains not any iodine compound, is highly deficient in iodine and was designed for studies dealing with iodine deficiency symptoms and also for dose-response-studies.

Crude Nutrients [%]
- Dry matter: 95.0
- Crude protein (N x 6.25): 20.8
- Crude fat: 4.2
- Crude fibre: 5.0
- Crude ash: 5.6
- N free extracts: 59.4
- Starch: 46.8
- Sugar: 10.8

Energy [MJ/kg]
- Gross Energy (GE): 18.1
- Metabolizable Energy (ME): 15.0

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: 0.02
- C 10:0: 0.45
- C 12:0: 0.02
- C 14:0: 0.19
- C 16:0: 1.07
- C 18:0: 2.12
- C 18:1: 1.07
- C 18:2: 1.07
- C 18:3: 1.07
- C 20:0: 0.02
- C 20:1: 0.02
- C 22:6: 0.02

Amino acids [%]
- Lysine: 1.71
- Methionine: 0.73
- Met+Cys: 0.82
- Threonine: 0.93
- Trytophan: 0.27
- Arginine: 0.76
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.09
- Leucine: 2.05
- Phenylalanine: 1.11
- Phe+Tyr: 2.22
- Glycine: 0.43
- Glutamic acid: 4.69
- Aspartic acid: 1.55
- Proline: 2.39
- Alanine: 0.68
- Serine: 1.24

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 49 mg
- Pantothenic acid: 56 mg
- Choline-Chloride: 1,040 mg
- Biotin: 310 µg
- Folic acid: 19 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: < 15 µg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

Feed composition
On request

Main products
E15550-20 Meal, single ground
E15550-24 10 mm pellets

Production and sale
snniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**Description**

This purified diet bases on the ssniff® EF Control (E15000). The feed was designed for the induction of a zinc deficiency in rats and mice; for that purpose not any Zn compound was added. The diet is also suitable for dose-response-studies with graded levels of zinc.

### Crude Nutrients [%]

- Dry matter 95.0
- Crude protein (N x 6.25) 20.8
- Crude fat 4.2
- Crude fibre 5.0
- Crude ash 5.6
- N free extracts 59.4
- Starch 46.8
- Sugar 10.8

### Energy [MJ/kg]

- Gross Energy (GE) 18.1
- Metabolizable Energy (ME) 15.4

### Minerals [%]

- Calcium 0.90
- Phosphorus 0.63
- Sodium 0.19
- Magnesium 0.21
- Potassium 0.97

### Fatty acids [%]

- C 8:0 —
- C 10:0 —
- C 12:0 —
- C 14:0 0.02
- C 16:0 0.45
- C 16:1 0.02
- C 18:0 0.19
- C 18:1 1.07
- C 18:2 2.12
- C 18:3 0.26
- C 20:0 0.02
- C 20:1 —
- C 20:5 —
- C 22:6 —

### Amino acids [%]

- Lysine 1.71
- Methionine 0.73
- Met+Cys 0.82
- Threonine 0.93
- Tryptophan 0.27
- Arginine 0.76
- Histidine 0.66
- Valine 1.42
- Isoleucine 1.09
- Leucine 2.05
- Phenylalanine 1.11
- Phe+Tyr 2.22
- Glycine 0.43
- Glutamic acid 4.69
- Aspartic acid 1.55
- Proline 2.39
- Alanine 0.68
- Serine 1.24

### Vitamins per kg

- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 56 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 1,040 mg
- Inositol 80 mg

### Trace elements per kg

- Iron 166 mg
- Manganese 98 mg
- Zinc <10 mg
- Copper 14 mg
- Iodine 1.2 mg
- Selenium 0.14 mg
- Cobalt 0.15 mg

**Production and sale**

ssniff Spezialitäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
# ssniiff® EF R/M, Zinc deficient

Experimental diet for rats and mice with low zinc contents

## Description

This purified diet which bases on the AIN 93G was designed for the induction of a zinc deficiency in rats and mice; for that purpose not any zinc compound was added. The diet is also suitable for dose-response-studies.

## Energy

<table>
<thead>
<tr>
<th>Energy</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>19.1</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>16.3 ¹</td>
</tr>
<tr>
<td></td>
<td>16.2 ²</td>
</tr>
</tbody>
</table>

¹ ME calculated according to the pig formula, Annex 4 of the German feed regulation
² ME calculated with the Atwater factors

## Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.5</td>
</tr>
<tr>
<td>Crude fat</td>
<td>7.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>3.0</td>
</tr>
<tr>
<td>N free extracts</td>
<td>63.4</td>
</tr>
<tr>
<td>Starch</td>
<td>38.1</td>
</tr>
<tr>
<td>Sugar</td>
<td>23.5</td>
</tr>
</tbody>
</table>

## Crude Nutrients [MJ/kg]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>19.1</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>16.3 ¹</td>
</tr>
<tr>
<td></td>
<td>16.2 ²</td>
</tr>
</tbody>
</table>

## Amino acids [%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.43</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.52</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.38</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.90</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.77</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.22</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.63</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.55</td>
</tr>
<tr>
<td>Valine</td>
<td>1.18</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.90</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.93</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.85</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.90</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.29</td>
</tr>
<tr>
<td>Proline</td>
<td>2.00</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.03</td>
</tr>
</tbody>
</table>

## Vitamins per kg

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>4,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,000 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>75 mg</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>5 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>---- mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>12 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>7 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>25 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>29 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>15 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>2 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>208 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,290 mg</td>
</tr>
</tbody>
</table>

## Trace elements per kg

<table>
<thead>
<tr>
<th>Element</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>48 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>23 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>&lt; 8 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>11 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>0.28 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.02 mg</td>
</tr>
</tbody>
</table>

## Main products

- E15571-20 Meal
- E15571-24 10 mm pellets

## Production and sale

ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
ssniff® EF R/M  Zinc and Copper deficient
Experimental diet for rats and mice, low zinc and copper contents

Description
This purified diet (basis: AIN 93G) was designed for the induction of a combined zinc and copper deficiency in rats and mice; for that purpose not any Zn and Cu compound was added. The diet is also suitable for dose-response-studies.

Crude Nutrients [%]
- Dry matter 96.0
- Crude protein (N x 6.25) 17.5
- Crude fat 7.1
- Crude fibre 5.0
- Crude ash 3.0
- N free extracts 63.4
- Starch 38.1
- Sugar 23.5

Energy [MJ/kg]
- Gross Energy (GE) 19.1
- Metabolizable Energy (ME) 16.3 1)

Minerals [%]
- Calcium 0.52
- Phosphorus 0.33
- Sodium 0.14
- Magnesium 0.08
- Potassium 0.55
- Ca : P 1.58

Fatty acids [%]
- C 8:0 —
- C 10:0 —
- C 12:0 —
- C 14:0 0.03
- C 16:0 0.75
- C 16:1 0.04
- C 18:0 0.32
- C 18:1 1.85
- C 18:2 3.71
- C 18:3 0.46
- C 20:0 0.04
- C 20:1 —
- C 20:5 —
- C 22:6 —

Amino acids [%]
- Lysine 1.43
- Methionine 0.52
- Cystine 0.38
- Met+Cys 0.90
- Threonine 0.77
- Tryptophan 0.22
- Arginine 0.63
- Histidine 0.55
- Valine 1.18
- Isoleucine 0.90
- Leucine 1.70
- Phenylalanine 0.93
- Phe+Tyr 1.85
- Glycine 0.36
- Glutamic acid 3.90
- Aspartic acid 1.29
- Proline 2.00
- Alanine 0.57
- Serine 1.03

Vitamins per kg
- Vitamin A 4,000 IU
- Vitamin D3 1,000 IU
- Vitamin E 75 mg
- Vitamin K (as menadione) 5 mg
- Vitamin C — mg
- Thiamin (B1) 12 mg
- Riboflavin (B2) 16 mg
- Pyridoxine (B6) 7 mg
- Cobalamin (B12) 25 μg
- Nicotinic acid 29 mg
- Pantothenic acid 15 mg
- Folic acid 2 mg
- Biotin 208 μg
- Choline-Chloride 1,290 mg

Trace elements per kg
- Iron 48 mg
- Manganese 23 mg
- Zinc < 8 mg
- Copper < 1 mg
- Iodine 0.28 mg
- Selenium 0.14 mg
- Cobalt 0.02 mg

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Feed composition
On request

Main products
E15580-20 Meal
E15580-24 10 mm pellets

1)  ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

Energy

---

Carbohydrates 61% from
Protein 24% from
Fat 15% from

Carbohydrates 65% from
Protein 18% from
Fat 17% from

---
Description

With the exception of small modifications, this purified diet corresponds largely to that diet published by the American Institute of Nutrition (AIN). According to AIN the feed obviously met the nutrient requirements of growing and adult rats and mice. However, after a long time of practical experience with the AIN 76A some renowned researcher groups (see Reeves PG, J Nutr 1997;127:838S-841S) recommend to use the original diet not in long-term studies, because adverse effects on animal health (hepatopathies, nephrocalcinosis etc.) are supposed. Since the 90s, two alternative diets are therefore available.

Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.8</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.4</td>
</tr>
<tr>
<td>Crude fat</td>
<td>5.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>2.0</td>
</tr>
<tr>
<td>N free extracts</td>
<td>67.4</td>
</tr>
<tr>
<td>Starch</td>
<td>13.9</td>
</tr>
<tr>
<td>Sugar</td>
<td>51.0</td>
</tr>
</tbody>
</table>

Energy [MJ/kg]

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>19.0</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td></td>
</tr>
<tr>
<td>16.2 1)</td>
<td></td>
</tr>
<tr>
<td>16.1 2)</td>
<td></td>
</tr>
</tbody>
</table>

Minerals [%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.63</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.55</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.11</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.05</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.36</td>
</tr>
<tr>
<td>Ca : P</td>
<td>1.14</td>
</tr>
</tbody>
</table>

Fatty acids [%]

<table>
<thead>
<tr>
<th>Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C10:0</td>
<td></td>
</tr>
<tr>
<td>C12:0</td>
<td></td>
</tr>
<tr>
<td>C14:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C16:0</td>
<td>0.57</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C18:0</td>
<td>0.10</td>
</tr>
<tr>
<td>C18:1</td>
<td>1.31</td>
</tr>
<tr>
<td>C18:2</td>
<td>2.77</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.05</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C20:1</td>
<td></td>
</tr>
<tr>
<td>C20:5</td>
<td></td>
</tr>
<tr>
<td>C22:6</td>
<td></td>
</tr>
</tbody>
</table>

Amino acids [%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.43</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.82</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.08</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.90</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.77</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.22</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.63</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.55</td>
</tr>
<tr>
<td>Valine</td>
<td>1.18</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.90</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.93</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.85</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.90</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.29</td>
</tr>
<tr>
<td>Proline</td>
<td>2.00</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Vitamins per kg

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>4,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,000 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>57 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>5 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>---- mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>3 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>5 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>6 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>10 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>29 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>15 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>2 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>20 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
</tbody>
</table>

Trace elements per kg

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>46 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>59 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>35 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>7 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>0.22 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.02 mg</td>
</tr>
</tbody>
</table>

Main products

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E15710-00</td>
<td>Meal, single ground</td>
</tr>
<tr>
<td>E15710-04</td>
<td>10 mm pellets</td>
</tr>
</tbody>
</table>

Production and sale

ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF R/M acc. AIN 93G**

**Experimental diet for rats and mice according to AIN - growth, reproduction**

**Description**

With the exception of small modifications, this purified diet corresponds largely to the diet AIN 93G published by the American Institute of Nutrition (AIN). The diet was designed for growing and reproductive rats and mice (performance metabolism); despite the fact, that the concentrations of the essential macro- and micronutrient are marginally low, the requirements for all nutrient should be met with that diet (acc. AIN).

### Crude Nutrients [%]
- Dry matter: 96.0
- Crude protein (N x 6.25): 17.5
- Crude fat: 7.1
- Crude fibre: 5.0
- Crude ash: 3.0
- N free extracts: 63.4
- Starch: 38.1
- Sugar: 23.5

### Energy [MJ/kg]
- Gross Energy (GE): 19.1

#### Metabolizable Energy (ME)

- **16.3 ¹)** Carbohydrates: 61 kJ%
- **24 kJ%** Protein
- **16.2 ²)** Carbohydrates: 65 kJ%
- **18 kJ%** Protein

**¹) ME calculated according to the pig formula, Annex 4 of the German feed regulation**

**²) ME calculated with the Atwater factors**

### Amino acids [%]
- Lysine: 1.43
- Methionine: 0.52
- Cystine: 0.38
- Met+Cys: 0.90
- Threonine: 0.77
- Tryptophan: 0.22
- Arginine: 0.63
- Histidine: 0.55
- Valine: 1.18
- Isoleucine: 0.90
- Leucine: 1.70
- Phenylalanine: 0.93
- Phe+Tyr: 1.85
- Glycine: 0.36
- Glutamic acid: 3.90
- Aspartic acid: 1.29
- Proline: 2.00
- Alanine: 0.57
- Serine: 1.03

### Vitamins per kg
- Vitamin A: 4,000 IU
- Vitamin D₃: 1,000 IU
- Vitamin E: 75 mg
- Vitamin K (as menadione): 4 mg
- Vitamin C: ---- mg
- Thiamin (B₁): 12 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 7 mg
- Cobalamin (B₁₂): 25 µg
- Nicotinic acid: 29 mg
- Pantothenic acid: 15 mg
- Folic acid: 2 mg
- Biotin: 208 µg
- Choline-Chloride: 1,290 mg

### Trace elements per kg
- Iron: 48 mg
- Manganese: 23 mg
- Zinc: 40 mg
- Copper: 11 mg
- Iodine: 0.28 mg
- Selenium: 0.14 mg
- Cobalt: 0.02 mg

**Minerals [%]
- Calcium: 0.52
- Phosphorus: 0.33
- Sodium: 0.14
- Magnesium: 0.08
- Potassium: 0.55
- Ca : P: 1.58

**Fatty acids [%]
- C 8:0: ---
- C10:0: ---
- C12:0: ---
- C14:0: 0.03
- C16:0: 0.75
- C16:1: 0.04
- C18:0: 0.32
- C18:1: 1.85
- C18:2: 3.71
- C18:3: 0.46
- C20:0: 0.04
- C20:1: ---
- C20:5: ---
- C22:6: ---

**Production and sale**

ssniff Spezialitäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Main products**
- E15712-00 Meal / powder
- E15712-04 10 mm pellets

---

¹) ME calculated according to the pig formula, Annex 4 of the German feed regulation

²) ME calculated with the Atwater factors

---

**Feed composition**

*On request*
Experiment al diet for rats and mice according to AIN - growth, reproduction

Description
With the exception of small modifications, this purified diet corresponds largely to the diet AIN 93G published by the American Institute of Nutrition (AIN). The diet is water soluble because of the exchange of some insoluble mineral compounds, and of starch against dextrines. The diet was designed for growing and reproductive rats and mice (performance metabolism); despite the fact, that the concentrations of the essential macro- and micronutrient are marginally low, the requirements for all nutrient should be met with that diet (acc. AIN).

Energy [MJ/kg]
- Gross Energy (GE) 19.5
- Metabolizable Energy (ME) 16.3

Minerals [%]
- Calcium 0.51
- Phosphorus 0.31
- Sodium 0.15
- Magnesium 0.08
- Potassium 0.55
- Ca : P 1.61

Fatty acids [%]
- C 8:0 —
- C10:0 —
- C12:0 —
- C14:0 0.03
- C16:0 0.76
- C16:1 0.04
- C18:0 0.33
- C18:1 1.86
- C18:2 3.74
- C18:3 0.46
- C20:0 0.04
- C20:1 —
- C20:5 —
- C22:6 —

Amino acids [%]
- Lysine 1.43
- Methionine 0.52
- Cystine 0.38
- Met+Cys 0.90
- Threonine 0.77
- Tryptophan 0.22
- Arginine 0.63
- Histidine 0.55
- Valine 1.18
- Isoleucine 0.90
- Leucine 1.70
- Phenylalanine 0.93
- Phe+Tyr 1.85
- Glycine 0.36
- Glutamic acid 3.90
- Aspartic acid 1.29
- Proline 2.00
- Alanine 0.57
- Serine 1.03

Vitamins per kg
- Vitamin A 4,000 IU
- Vitamin D₃ 1,000 IU
- Vitamin E 75 mg
- Vitamin K (as menadione) 4 mg
- Vitamin C — mg
- Thiamin (B₁) 12 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 7 mg
- Cobalamin (B₁₂) 25 µg
- Nicotinic acid 29 mg
- Pantothenic acid 15 mg
- Folic acid 2 mg
- Biotin 208 µg
- Choline-Chloride 1,290 mg

Trace elements per kg
- Iron 48 mg
- Manganese 23 mg
- Zinc 40 mg
- Copper 11 mg
- Iodine 0.28 mg
- Selenium 0.14 mg
- Cobalt 0.02 mg

Production and sale
ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Feed composition
On request

Main products
E15712-10 Meal
### Description

This purified diet corresponds largely to the diet AIN 93M published by the American Institute of Nutrition (AIN). The diet obviously covers the nutrient requirements of adult rats and mice to the full extent (acc. AIN). However, under less favourable maintenance conditions, stress, sterilization with high irradiation dosage etc. the supply with the essential nutrients may become marginally short; under these condition particularly a higher vitamin fortification is recommended.

#### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.2</td>
</tr>
<tr>
<td>Crude protein (N \times 6.25)</td>
<td>12.3</td>
</tr>
<tr>
<td>Crude fat</td>
<td>4.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>2.9</td>
</tr>
<tr>
<td>N free extracts</td>
<td>71.9</td>
</tr>
<tr>
<td>Starch</td>
<td>44.7</td>
</tr>
<tr>
<td>Sugar</td>
<td>25.7</td>
</tr>
</tbody>
</table>

#### Energy [MJ/kg]

- Gross Energy (GE): 18.2
- Metabolizable Energy (ME): 15.6

**ME calculated according to the pig formula, Annex 4 of the German feed regulation**

**ME calculated with the Atwater factors**

#### Amino acids [%]

- Lysine: 1.00
- Methionine: 0.37
- Cystine: 0.23
- Met+Cys: 0.60
- Threonine: 0.54
- Tryptophan: 0.16
- Arginine: 0.44
- Histidine: 0.38
- Valine: 0.83
- Isoleucine: 0.63
- Leucine: 1.19
- Phenylalanine: 0.65
- Phe+Tyr: 1.30
- Glycine: 0.25
- Glutamic acid: 2.73
- Aspartic acid: 0.90
- Proline: 1.40
- Alanine: 0.40
- Serine: 0.72

#### Vitamins per kg

- Vitamin A: 4,000 IU
- Vitamin D₃: 1,000 IU
- Vitamin E: 75 mg
- Vitamin K (as menadione): 4 mg
- Vitamin C: ---- mg
- Thiamin (B₁): 12 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 7 mg
- Cobalamin (B₁₂): 25 µg
- Nicotinic acid: 29 mg
- Pantothenic acid: 15 mg
- Folic acid: 2 mg
- Biotin: 206 µg
- Choline-Chloride: 1,280 mg

#### Trace elements per kg

- Iron: 47 mg
- Manganese: 23 mg
- Zinc: 38 mg
- Copper: 10 mg
- Iodine: 0.28 mg
- Selenium: 0.13 mg
- Cobalt: 0.02 mg

### Feed composition

**On request**

### Main products

- E15713-00 Meal, single ground
- E15713-04 10 mm pellets

### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® EF R/M acc. TD88137 mod.**

Experimental diet for rodent with butter fat & cholesterol

**Western Type Diet**

**Description**

This experimental diet contains high amounts of fat and cholesterol, however, the cholesterol content adjusted to the specific experimental design. The Western type diet will induce obesity and promotes the development of atherosclerotic lesions (plaques) in the cardiovascular system and diabetes type 2 (NIDDM). The time taken until first clinical symptoms or microscopic lesions occur depends largely on the rat or mouse strain and the previous dietary history (fat supply).

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>94.6</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td>21.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>4.5</td>
</tr>
<tr>
<td>N free extracts</td>
<td>48.8</td>
</tr>
<tr>
<td>Starch</td>
<td>14.6</td>
</tr>
<tr>
<td>Sugar</td>
<td>33.2</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- **Gross Energy (GE)**: 22.0
- **Metabolizable Energy (ME)**: 19.1

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.76</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.46</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.37</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.10</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.54</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td>0.80</td>
</tr>
<tr>
<td>C 6:0</td>
<td>0.53</td>
</tr>
<tr>
<td>C 8:0</td>
<td>0.29</td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.63</td>
</tr>
<tr>
<td>C 12:0</td>
<td>0.72</td>
</tr>
<tr>
<td>C 14:0</td>
<td>2.21</td>
</tr>
<tr>
<td>C 16:0</td>
<td>5.74</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.38</td>
</tr>
<tr>
<td>C 17:0</td>
<td>0.13</td>
</tr>
<tr>
<td>C 18:0</td>
<td>2.04</td>
</tr>
<tr>
<td>C 18:1</td>
<td>4.63</td>
</tr>
<tr>
<td>C 18:2</td>
<td>0.38</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.11</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.04</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:4</td>
<td>—</td>
</tr>
</tbody>
</table>

**Cholesterol [mg/kg]**

- 2,071

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.42</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.63</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.00</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.76</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.23</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.67</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.52</td>
</tr>
<tr>
<td>Valine</td>
<td>1.19</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.93</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.90</td>
</tr>
<tr>
<td>Ph+Tyr</td>
<td>1.80</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.84</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.27</td>
</tr>
<tr>
<td>Proline</td>
<td>1.97</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.02</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 1,030 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 305 µg
- Choline-Chloride: 2,040 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 48 mg
- Manganese: 23 mg
- Zinc: 39 mg
- Copper: 11 mg
- Iodine: 0.28 mg
- Selenium: 0.14 mg
- Cobalt: 0.02 mg

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

*Main products*

- E15721-30 Meal / powder
- E15721-34 10 mm pellets

*Production and sale*

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
# ssniff® EF R/M CD88137 control

**Experimental diet for rats and mice, control**

## Description

The nutrient contents of this experimental diet, except the fat content (energy), fat source (fatty acid composition), sugar and starch contents, are identical to the TD88137 mod.; as a result of these modifications the original atherogenic effects are removed, so that the diet is ideally composed to serve as control diet to the TD88137.

## Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.9</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.1</td>
</tr>
<tr>
<td>Crude fat</td>
<td>5.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>4.2</td>
</tr>
<tr>
<td>N free extracts</td>
<td>64.5</td>
</tr>
<tr>
<td>Starch</td>
<td>39.0</td>
</tr>
<tr>
<td>Sugar</td>
<td>23.3</td>
</tr>
</tbody>
</table>

## Energy [MJ/kg]

- **Gross Energy (GE):** 18.4
- **Metabolizable Energy (ME):**
  - 15.7 1) (ME calculated according to the pig formula, Annex 4 of the German feed regulation)
  - 15.6 2) (ME calculated with the Atwater factors)

## Amino acids [%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.39</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.91</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.99</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.75</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.22</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.62</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.53</td>
</tr>
<tr>
<td>Valine</td>
<td>1.15</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.88</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.66</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.91</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.81</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.35</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.81</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.26</td>
</tr>
<tr>
<td>Proline</td>
<td>1.95</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.55</td>
</tr>
<tr>
<td>Serine</td>
<td>1.01</td>
</tr>
</tbody>
</table>

## Vitamins per kg

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 1,030 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 305 µg
- Choline-Chloride: 2,040 mg
- Inositol: 80 mg

## Trace elements per kg

- Iron: 48 mg
- Manganese: 23 mg
- Zinc: 39 mg
- Copper: 11 mg
- Iodine: 0.28 mg
- Selenium: 0.14 mg
- Cobalt: 0.02 mg

## Minerals [%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.77</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.46</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.22</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.08</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.55</td>
</tr>
</tbody>
</table>

## Fatty acids [%]

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td></td>
</tr>
<tr>
<td>C 6:0</td>
<td></td>
</tr>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C 10:0</td>
<td></td>
</tr>
<tr>
<td>C 12:0</td>
<td></td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.55</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.03</td>
</tr>
<tr>
<td>C 17:0</td>
<td></td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.23</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.32</td>
</tr>
<tr>
<td>C 18:2</td>
<td>2.65</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.33</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C 20:1</td>
<td></td>
</tr>
<tr>
<td>C 20:4</td>
<td></td>
</tr>
<tr>
<td>Cholesterol [mg/kg]</td>
<td></td>
</tr>
</tbody>
</table>

## Vitamins [mg/kg]

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 1,030 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 305 µg
- Choline-Chloride: 2,040 mg
- Inositol: 80 mg

## Trace elements [mg/kg]

- Iron: 48 mg
- Manganese: 23 mg
- Zinc: 39 mg
- Copper: 11 mg
- Iodine: 0.28 mg
- Selenium: 0.14 mg
- Cobalt: 0.02 mg

## Feed composition

**On request**

## Main products

- E15720-00  Meal, single ground
- E15720-04  10 mm pellets

## Production and sale

ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
[www.ssniff.de](http://www.ssniff.de) / [www.ssnif.com](http://www.ssnif.com)
**ssniff® EF D12079 mod.**

**Experimental diet for rodents with 21 % butterfat & cholesterol (1 % corn oil)**

**Western Type Diet**

### Description
This experimental diet contains high amounts of fat and cholesterol. The Western diet will induce obesity and promotes the development of atherosclerotic lesions (plaques) in the cardiovascular system and diabetes type 2 (NIDDM). The diet additionally contains corn oil in order to supply the animal with sufficient amounts of essential fatty acids.

### Crude Nutrients [\%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>94.7</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td><strong>22.1</strong></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>4.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>45.0</td>
</tr>
<tr>
<td>Starch</td>
<td>12.8</td>
</tr>
<tr>
<td>Sugar</td>
<td>33.8</td>
</tr>
</tbody>
</table>

### Energy [MJ/kg]

- **Gross Energy (GE)** 22.1
- **Metabolizable Energy (ME)**
  - 18.8 
  - 19.3

### Minerals [\%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.79</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.43</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.40</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.10</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.54</td>
</tr>
</tbody>
</table>

### Fatty acids [\%]

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td>0.80</td>
</tr>
<tr>
<td>C 6:0</td>
<td>0.53</td>
</tr>
<tr>
<td>C 8:0</td>
<td>0.29</td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.63</td>
</tr>
<tr>
<td>C 12:0</td>
<td>0.72</td>
</tr>
<tr>
<td>C 14:0</td>
<td>2.22</td>
</tr>
<tr>
<td>C 16:0</td>
<td>5.73</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.38</td>
</tr>
<tr>
<td>C 17:0</td>
<td>0.14</td>
</tr>
<tr>
<td>C 18:0</td>
<td>2.07</td>
</tr>
<tr>
<td>C 18:1</td>
<td>4.90</td>
</tr>
<tr>
<td>C 18:2</td>
<td>0.93</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.12</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.04</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:4</td>
<td></td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>2,071</td>
</tr>
</tbody>
</table>

### Amino acids [\%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.42</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.63</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.00</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.76</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.23</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.67</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.52</td>
</tr>
<tr>
<td>Valine</td>
<td>1.19</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.93</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.90</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.80</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.84</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.27</td>
</tr>
<tr>
<td>Proline</td>
<td>1.97</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.02</td>
</tr>
</tbody>
</table>

### Vitamins per kg

- **Vitamin A** 15,000 IU
- **Vitamin D₃** 1,500 IU
- **Vitamin E** 150 mg
- **Vitamin K (as menadione)** 20 mg
- **Vitamin C** 30 mg
- **Thiamin (B₁)** 16 mg
- **Riboflavin (B₂)** 16 mg
- **Pyridoxine (B₆)** 18 mg
- **Cobalamin (B₁₂)** 30 μg
- **Nicotinic acid** 45 mg
- **Pantothenic acid** 55 mg
- **Folic acid** 19 mg
- **Biotin** 305 μg
- **Choline-Chloride** 2,040 mg
- **Inositol** 80 mg

### Trace elements per kg

- **Iron** 48 mg
- **Manganese** 22 mg
- **Zinc** 36 mg
- **Copper** 11 mg
- **Iodine** 0.28 mg
- **Selenium** 0.14 mg
- **Cobalt** 0.02 mg

**Main products**

- E15775-30 Meal/powder
- E15775-34 10 mm pellets

**Feed composition On request**

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de

[www.ssniff.de](http://www.ssniff.de) / [www.ssniff.com](http://www.ssniff.com)

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF acc. D12492 (I) mod.**

Experimental diet for rats and mice, very high fat content (LARD) / DIO series

**Description**

The experimental diet is characterized by extremely high amounts of fat and low (original) cholesterol contents. However, the cholesterol concentration and the fat source (fatty acids) can be individually adjusted to the scientific question or to the experimental design. The feed will quickly induce obesity and promotes the development of diabetes type 2 (NIDDM), because of the high fat content and the saturated fatty acids. The feeding period until first clinical symptoms might be observed depends largely on the mouse strain and the previous dietary history (fat supply).

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>97.1</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>24.1</td>
</tr>
<tr>
<td>Crude fat</td>
<td>34.0</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>6.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.0</td>
</tr>
<tr>
<td>N free extracts</td>
<td>27.1</td>
</tr>
<tr>
<td>Starch</td>
<td>1.1</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>23.8</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- **Gross Energy (GE)** 24.0
- **Metabolizable Energy (ME)** 21.0 \(^1\)

\(^{1}\) ME calculated according to the pig formula, Annex 4 of the German feed regulation

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1.03</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.61</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.20</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.17</td>
</tr>
<tr>
<td>Potassium</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.04</td>
</tr>
<tr>
<td>C 12:0</td>
<td>0.07</td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.44</td>
</tr>
<tr>
<td>C 16:0</td>
<td>7.72</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.94</td>
</tr>
<tr>
<td>C 17:0</td>
<td></td>
</tr>
<tr>
<td>C 18:0</td>
<td>4.34</td>
</tr>
<tr>
<td>C 18:1</td>
<td>13.57</td>
</tr>
<tr>
<td>C 18:2</td>
<td>4.75</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.51</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:4</td>
<td>0.53</td>
</tr>
<tr>
<td>C 20:5</td>
<td></td>
</tr>
<tr>
<td>C 22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Cholesterol [mg/kg]** 265

(Original content)

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.98</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.83</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.46</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.28</td>
</tr>
<tr>
<td>Threonine</td>
<td>1.07</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.31</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.88</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.76</td>
</tr>
<tr>
<td>Valine</td>
<td>1.64</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.25</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.36</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.29</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.57</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.50</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>5.41</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.79</td>
</tr>
<tr>
<td>Proline</td>
<td>2.76</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.79</td>
</tr>
<tr>
<td>Serine</td>
<td>1.43</td>
</tr>
</tbody>
</table>

**Vitamins** per kg

- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 45 mg
- Pantothenic acid 55 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 2,300 mg
- Inositol 80 mg

**Trace elements** per kg

- Iron 139 mg
- Manganese 82 mg
- Zinc 56 mg
- Copper 12 mg
- Iodine 0.97 mg
- Selenium 0.13 mg
- Cobalt 0.13 mg

**Main products**

- E15742-34 10 mm pellets, Colour BLUE
- E15742-347 10 mm pellets, Colour BLUE, 25 kGy \(\gamma\)-irradiated is vitamin fortified

**Feed composition**

- On request

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

*Research Diets Inc.*
ssniff® EF acc. D12492 (II) mod. *

Experimental diet for rats and mice, very high fat content (tallow) / DIO series

**Description**

The experimental diet is characterized by extremely high amounts of fat and low (original) cholesterol contents. However, the cholesterol concentration and the fat source (fatty acids) can be individually adjusted to the scientific question or to the experimental design. Because that diet has the highest fat content among the DIO series (diet induced obesity) the feed will quickly induce obesity and promotes the development of diabetes type 2 (NIDDM) as well as atherosclerotic lesions (plaques) in the cardiovascular system. The feeding period until first clinical symptoms might be observed depends largely on the rat or mouse strain and the previous dietary history (fat supply).

**Crude Nutrients [%]**
- Dry matter: 97.1
- Crude protein (N x 6.25): 24.1
- **Crude fat**: 34.0
- Crude fibre: 6.0
- Crude ash: 6.1
- N free extracts: 27.0
- Starch: 2.2
- Sugar / Dextrines: 22.4

**Energy [MJ/kg]**
- Gross Energy (GE): 24.4
- Metabolizable Energy (ME): 21.0

**Minerals [%]**
- Calcium: 1.05
- Phosphorus: 0.61
- Sodium: 0.20
- Magnesium: 0.17
- Potassium: 1.00

**Fatty acids [%]**
- C 8:0: —
- C 10:0: —
- C 12:0: 0.03
- C 14:0: 1.03
- C 16:0: 8.06
- C 16:1: 0.78
- C 17:0: 0.38
- C 18:0: 5.61
- C 18:1: 12.13
- C 18:2: 2.37
- C 18:3: 0.33
- C 20:0: 0.04
- C 20:1: 0.01
- C 20:4: 0.07
- C 20:5: —
- C 22:6: —

**Cholesterol [mg/kg]** 290

(Original content)

**Amino acids [%]**
- Lysine: 1.98
- Methionine: 0.83
- Cystine: 0.46
- Met+Cys: 1.28
- Threonine: 1.07
- Tryptophan: 0.31
- Arginine: 0.88
- Histidine: 0.76
- Valine: 1.64
- Isoleucine: 1.25
- Leucine: 2.36
- Phenylalanine: 1.29
- Phe+Tyr: 2.57
- Glycine: 0.50
- Glutamic acid: 5.41
- Aspartic acid: 1.79
- Proline: 2.76
- Alanine: 0.79
- Serine: 1.43

**Vitamins per kg**
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 2,300 mg
- Inositol: 80 mg

**Trace elements per kg**
- Iron: 139 mg
- Manganese: 82 mg
- Zinc: 56 mg
- Copper: 12 mg
- Iodine: 0.97 mg
- Selenium: 0.13 mg
- Cobalt: 0.13 mg

**Production and sale**
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

* Research Diets Inc.
ssniff® EF R/M acc. D12451 (I) mod. *
Experimental diet for rats and mice, high fat content (lard) / DIO series

Description
Also this experimental diet of the DIO series (diet induced obesity) has high fat and sugar concentrations. The cholesterol comes only from the animal fat source; both the cholesterol and fat content as well as the fat source can be adjusted to the particular scientific question (see also D12451 (II) mod.). The feed was designed for the induction of obesity with all aftereffects.

Crude Nutrients [\%]
- Dry matter 96.9
- Crude protein (N x 6.25) 22.5

Crude fat 23.1
- Crude fibre 5.7
- Crude ash 5.9
- N free extracts 39.8
- Starch 8.6
- Sugar / Dextrines 29.4

Energy [MJ/kg]
- Gross Energy (GE) 22.1
- Metabolizable Energy (ME) 19.1

Minerals [\%]
- Calcium 1.05
- Phosphorus 0.69
- Sodium 0.20
- Magnesium 0.15
- Potassium 0.72

Fatty acids [\%]
- C 8:0 —
- C 10:0 —
- C 12:0 0.02
- C 14:0 0.29
- C 16:0 5.15
- C 16:1 0.62
- C 17:0 —
- C 18:0 2.83
- C 18:1 8.99
- C 18:2 3.19
- C 18:3 0.37
- C 20:0 0.01
- C 20:1 —
- C 20:4 0.35
- C 20:5 —
- C 22:6 —

Amino acids [\%]
- Lysine 1.85
- Methionine 0.78
- Cystine 0.30
- Met+Cys 1.08
- Threonine 1.00
- Tryptophan 0.29
- Arginine 0.82
- Histidine 0.71
- Valine 1.54
- Leucine 2.22
- Isoleucine 1.18
- Phenylalanine 2.41
- Glycine 0.47
- Glutamic acid 5.08
- Aspartic acid 1.68
- Proline 2.59
- Alanine 0.74
- Serine 1.34

Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 45 mg
- Pantothenic acid 55 mg
- Folic acid 19 mg
- Biotin 305 µg
- Choline-Chloride 1,050 mg
- Inositol 80 mg

Trace elements per kg
- Iron 122 mg
- Manganese 72 mg
- Zinc 50 mg
- Copper 10 mg
- Iodine 0.85 mg
- Selenium 0.12 mg
- Cobalt 0.11 mg

Cholesterol [mg/kg] 175
(original content)

Main products
E15744-30 Meal, single ground
E15744-34 10 mm pellets

Feed composition
On request

Production and sale
ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

* Research Diets Inc.
**ssniff® EF R/M acc. D12451 (II) mod.**

Experimental diet for rats and mice, high fat content (tallow) / DIO series

**Description**

In this diet basing on the D12451 (I) only the fat source was exchanged, resulting in more long-chain saturated fatty acids; with that it is ideally adjusted to the D12492 diet.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.9</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>22.5</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td>23.1</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.7</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.9</td>
</tr>
<tr>
<td>N free extracts</td>
<td>39.8</td>
</tr>
<tr>
<td>Starch</td>
<td>8.6</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>29.4</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- Gross Energy (GE) 22.1
- Metabolizable Energy (ME) 19.1

**Vitamins per kg**

- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 45 mg
- Pantothenic acid 55 mg
- Folic acid 19 mg
- Biotin 305 µg
- Choline-Chloride 1,050 mg
- Inositol 80 mg

**Trace elements per kg**

- Iron 122 mg
- Manganese 72 mg
- Zinc 50 mg
- Copper 10 mg
- Iodine 0.85 mg
- Selenium 0.12 mg
- Cobalt 0.11 mg

**Feeds composition**

- On request

**Main products**

- E15746-30 Meal, single ground
- E15746-34 10 mm pellets

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
### Description
This experimental diet of the DIO series with low fat and high sugar and dextrin concentrations can be used as a control diet to the D12451 or D12492 in experiments, in which the effect of fat additions on the development of obesity and Metabolic Syndrome will be studied. Alternatively, also the ssniff® EF R/M (E15000) may serve as control feed.

### Crude Nutrients [%]
- **Dry matter**: 96.3
- **Crude protein (N x 6.25)**: 18.1
- **Crude fat**: 4.1
- **Crude fibre**: 4.7
- **Crude ash**: 6.2
- **N free extracts**: 63.3
- **Starch**: 26.6
- **Sugar**: 32.3
- **Dextrines**: 3.0

### Energy [MJ/kg]
- **Gross Energy (GE)**: 17.8
- **Metabolizable Energy (ME)**: 15.8
  1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

### Crude Nutrients [%]
- **Dry matter**: 96.3
- **Crude protein (N x 6.25)**: 18.1
- **Crude fat**: 4.1
- **Crude fibre**: 4.7
- **Crude ash**: 6.2
- **N free extracts**: 63.3
- **Starch**: 26.6
- **Sugar**: 32.3
- **Dextrines**: 3.0

### Energy [MJ/kg]
- **Gross Energy (GE)**: 17.8
- **Metabolizable Energy (ME)**: 15.8
  1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

### Miners [\%]
- **Calcium**: 1.06
- **Phosphorus**: 0.70
- **Sodium**: 0.19
- **Magnesium**: 0.21
- **Potassium**: 0.97

### Fatty acids [%]
- **C 8:0**: —
- **C 10:0**: —
- **C 12:0**: 0.01
- **C 14:0**: 0.04
- **C 16:0**: 0.66
- **C 16:1**: 0.06
- **C 17:0**: —
- **C 18:0**: 0.33
- **C 18:1**: 1.31
- **C 18:2**: 1.44
- **C 18:3**: 0.17
- **C 20:0**: 0.01
- **C 20:1**: —
- **C 20:4**: 0.03
- **C 20:5**: —
- **C 22:6**: —

### Cholesterol [mg/kg] (original content)
- **14**

### Amino acids [%]
- **Lysine**: 1.47
- **Methionine**: 0.64
- **Cystine**: 0.33
- **Met+Cys**: 0.97
- **Threonine**: 0.80
- **Tryptophan**: 0.23
- **Arginine**: 0.65
- **Histidine**: 0.57
- **Valine**: 1.22
- **Isoleucine**: 0.94
- **Leucine**: 1.76
- **Phenylalanine**: 0.96
- **Phe+Tyr**: 1.92
- **Glycine**: 0.37
- **Glutamic acid**: 4.04
- **Aspartic acid**: 1.34
- **Proline**: 2.07
- **Alanine**: 0.59
- **Serine**: 1.07

### Vitamins per kg
- **Vitamin A**: 15,000 IU
- **Vitamin D₃**: 1,500 IU
- **Vitamin E**: 150 mg
- **Vitamin K (as menadione)**: 20 mg
- **Vitamin C**: 30 mg
- **Thiamin (B₁)**: 16 mg
- **Riboflavin (B₂)**: 16 mg
- **Pyridoxine (B₆)**: 18 mg
- **Cobalamin (B₁₂)**: 30 µg
- **Nicotinic acid**: 45 mg
- **Pantothenic acid**: 55 mg
- **Folic acid**: 19 mg
- **Biotin**: 305 µg
- **Choline-Chloride**: 1.040 mg
- **Inositol**: 80 mg

### Trace elements per kg
- **Iron**: 166 mg
- **Manganese**: 98 mg
- **Zinc**: 64 mg
- **Copper**: 14 mg
- **Iodine**: 1.16 mg
- **Selenium**: 0.14 mg
- **Cobalt**: 0.14 mg

### Feed composition

### Main products
- **E15745-00**: Meal, single ground
- **E15745-04**: 10 mm pellets

### Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

*Research Diets Inc.*
Description

This experimental diet of the DIO series with low fat and sugar contents can serve as a control diet to the D12451 or D12492, which are used to induce obesity and NIDDM / Metabolic Syndrome. In contrast to the original D12450B the sugar content of that diet has been markedly reduced and the fibre slightly increased.

Crude Nutrients [%]

- Dry matter: 96.1
- Crude protein (N x 6.25): 18.1
- Crude fat: 5.1
- Crude fibre: 6.0
- Crude ash: 6.2
- N free extracts: 62.0
- Starch: 40.7
- Sugar: 8.6
- Dextrines: 8.0

Energy [MJ/kg]

- Gross Energy (GE): 17.9
- Metabolizable Energy (ME):
  - [1]) ME calculated according to the pig formula, Annex 4 of the German feed regulation
  - [2]) ME calculated with the Atwater factors

Minerals [%]

- Calcium: 1.09
- Phosphorus: 0.70
- Sodium: 0.20
- Magnesium: 0.21
- Potassium: 0.96

Fatty acids [%]

- C 8:0: —
- C10:0: —
- C12:0: —
- C14:0: 0.02
- C16:0: 0.55
- C16:1: 0.03
- C17:0: —
- C18:0: 0.24
- C18:1: 1.32
- C18:2: 2.65
- C18:3: 0.33
- C20:0: 0.03
- C20:1: —
- C22:4: —
- C22:5: —
- C22:6: —
  - Cholesterol [mg/kg]: —

Amino acids [%]

- Lysine: 1.48
- Methionine: 0.64
- Cystine: 0.33
- Met+Cys: 0.97
- Threonine: 0.80
- Tryptophan: 0.23
- Arginine: 0.65
- Histidine: 0.57
- Valine: 1.22
- Isoleucine: 0.94
- Leucine: 1.76
- Phenylalanine: 0.96
- Phe+Tyr: 1.92
- Glycine: 0.37
- Glutamic acid: 4.04
- Aspartic acid: 1.34
- Proline: 2.07
- Alanine: 0.59
- Serine: 1.07

Vitamins per kg

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 305 µg
- Choline-Chloride: 1.040 mg
- Inositol: 80 mg

Trace elements per kg

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

Main products

- E15748-00 Meal
- E15748-04 10 mm pellets
- E15748-304 10 mm pellets
  - (vitamin fortified for γ-irradiation)

Feed composition

Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

* Research Diets Inc.
ssniff® EF R/M  acc. D12450B (II) mod.  *
Experimental diet for rats and mice, low fat content (tallow) / DIO series - control

Description
In this low fat diet of the DIO series basing on the D12450B (I) only the fat source was exchanged, resulting in more long-chain saturated fatty acids; this control feed is therefore ideally adjusted to the D12451 (II) and D12492 diet.

Crude Nutrients [%]
- Dry matter 96.3
- Crude protein (N x 6.25) 18.1
- Crude fat 4.1
- Crude fibre 4.7
- Crude ash 6.2
- N free extracts 63.3
- Starch 26.6
- Sugar / Dextrines 35.0

Energy [MJ/kg]
- Gross Energy (GE) 17.8
- Metabolizable Energy (ME) 15.8

Fatty acids [%]
- C 8:0 —
- C10:0 —
- C12:0 0.01
- C14:0 0.07
- C16:0 0.68
- C16:1 0.05
- C17:0 0.02
- C18:0 0.40
- C18:1 1.23
- C18:2 1.31
- C18:3 0.16
- C20:0 0.01
- C20:1 —
- C20:4 —
- C20:5 —
- C22:6 —

Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 45 mg
- Pantothenic acid 55 mg
- Folic acid 19 mg
- Biotin 305 µg
- Choline-Chloride 1.040 mg
- Inositol 80 mg

Trace elements per kg
- Iron 166 mg
- Manganese 98 mg
- Zinc 64 mg
- Copper 14 mg
- Iodine 1.16 mg
- Selenium 0.14 mg
- Cobalt 0.14 mg

Amino acids [%]
- Lysine 1.47
- Methionine 0.64
- Cystine 0.33
- Met+Cys 0.97
- Threonine 0.80
- Tryptophan 0.23
- Arginine 0.65
- Histidine 0.57
- Valine 1.22
- Isoleucine 0.94
- Leucine 1.76
- Phenylalanine 0.96
- Phe+Tyr 1.97
- Glycine 0.37
- Glutamic acid 4.04
- Aspartic acid 1.34
- Proline 2.07
- Alanine 0.59
- Serine 1.07

Minerals [%]
- Calcium 1.06
- Phosphorus 0.70
- Sodium 0.19
- Magnesium 0.21
- Potassium 0.97

Cholesterol [mg/kg]  15

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

* Research Diets Inc.
Experimental diet for rats and mice, high fat and cholesterol content

**Description**

This experimental diet contains high amounts of fat, in which palmitic, stearic and oleic acid are the predominant fatty acids. Hence, the diet will promote the incidence of diabetes type 2 (NIDDM) and the development of atherosclerotic lesions (plaques) in the cardiovascular system due to the addition of cholesterol. The feeding period until first clinical symptoms will be observed depends largely on the rat or mouse strain and the previous dietary history (fat supply).

**Crude Nutrients [%]**
- Dry matter 97.0
- Crude protein (N x 6.25) 21.0
- Crude fat 21.0
- Crude fibre 5.5
- Crude ash 6.3
- N free extracts 43.3
- Starch 21.0
- Sugar / Dextrines 21.0

**Energy [MJ/kg]**
- Gross Energy (GE) 22.0
- Metabolizable Energy (ME) 18.4

**Minerals [%]**
- Calcium 1.09
- Phosphorus 0.71
- Sodium 0.19
- Magnesium 0.21
- Potassium 0.97

**Fatty acids [%]**
- C 8:0 —
- C10:0 —
- C12:0 —
- C14:0 0.04
- C16:0 4.54
- C16:1 0.08
- C17:0 —
- C18:0 5.98
- C18:1 6.14
- C18:2 1.72
- C18:3 0.22
- C20:0 0.18
- C20:1 —
- C20:4 —
- C20:5 —
- C22:6 —

**Amino acids [%]**
- Lysine 1.71
- Methionine 0.73
- Cystine 0.39
- Met+Cys 1.12
- Threonine 0.93
- Tryptophan 0.27
- Arginine 0.76
- Histidine 0.66
- Valine 1.42
- Isoleucine 1.09
- Leucine 2.05
- Phenylalanine 1.11
- Phe+Tyr 2.22
- Glycine 0.43
- Glutamic acid 4.69
- Aspartic acid 1.55
- Proline 2.39
- Alanine 0.68
- Serine 1.24

**Vitamins**
- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 18 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 49 mg
- Pantothenic acid 55 mg
- Folic acid 19 mg
- Biotin 305 µg
- Choline-Chloride 1,050 mg
- Inositol 80 mg

**Trace elements per kg**
- Iron 166 mg
- Manganese 98 mg
- Zinc 65 mg
- Copper 13 mg
- Iodine 1.16 mg
- Selenium 0.14 mg
- Cobalt 0.15 mg

**Main products**
- E15749-30 Meal, single ground
- E15749-34 10 mm pellets

**Feed composition**
- On request

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

*Research Diets Inc.*

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**Description**

The experimental diet is characterized by extremely high amounts of fat with middle-chain, saturated fatty acids (coconut oil); because of its high fat content the feed will quickly induce obesity and may promote the development of Metabolic Syndrome with diabetes type 2 (NIDDM). The feeding period until first clinical symptoms might be observed depends largely on the rat or mouse strain and the previous dietary history (fat supply).

<table>
<thead>
<tr>
<th>Crude Nutrients</th>
<th>[%]</th>
<th>Energy</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>97.1</td>
<td>Gross Energy (GE)</td>
<td>25.1</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.0</td>
<td>Metabolizable Energy (ME)</td>
<td></td>
</tr>
<tr>
<td>Crude fat</td>
<td>35.7</td>
<td>22.6 1)</td>
<td></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>0.1</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N free extracts</td>
<td>34.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starch</td>
<td>17.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dextrines</td>
<td>16.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

<table>
<thead>
<tr>
<th>Fatty acids</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 6:0</td>
<td>0.20</td>
</tr>
<tr>
<td>C 8:0</td>
<td>2.53</td>
</tr>
<tr>
<td>C 10:0</td>
<td>2.00</td>
</tr>
<tr>
<td>C 12:0</td>
<td>14.96</td>
</tr>
<tr>
<td>C 14:0</td>
<td>5.75</td>
</tr>
<tr>
<td>C 16:0</td>
<td>3.14</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 17:0</td>
<td>—</td>
</tr>
<tr>
<td>C 18:0</td>
<td>1.05</td>
</tr>
<tr>
<td>C 18:1</td>
<td>2.86</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.82</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.15</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:5</td>
<td>—</td>
</tr>
<tr>
<td>C 22:6</td>
<td>—</td>
</tr>
</tbody>
</table>

| Cholesterol [mg/kg]| — |

<table>
<thead>
<tr>
<th>Amino acids</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.64</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.81</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.19</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.00</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.89</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.26</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.73</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.63</td>
</tr>
<tr>
<td>Valine</td>
<td>1.36</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.04</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.96</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.07</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.13</td>
</tr>
<tr>
<td>Glucose</td>
<td>0.42</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.49</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.48</td>
</tr>
<tr>
<td>Proline</td>
<td>2.29</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.65</td>
</tr>
<tr>
<td>Serine</td>
<td>1.19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vitamins</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>154 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>17 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30 μg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>46 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>55 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>19 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>310 μg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,050 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trace elements</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>151 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>90 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>60 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>13 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.05 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.14 mg</td>
</tr>
</tbody>
</table>

**Main products**

- E15771-30 Meal
- E15771-34 10 mm pellets (violet colour)

**Production and sale**

ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

* Research Diets Inc.*
**ssniff® EF R/M  D12331 mod.* / Surwit**  
Experimental diet with very high fat content (hydrogenated coconut oil) / DIO

### Description

The experimental diet is characterized by extremely high amounts of fat with middle-chain, saturated fatty acids (coconut oil); because of its high fat content the feed will quickly induce obesity and may promote the development of Metabolic Syndrome with diabetes type 2 (NIDDM). The feeding period until first clinical symptoms might be observed depends largely on the rat or mouse strain and the previous dietary history (fat supply).

### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>97.1</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>21.6</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td><strong>35.7</strong></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>0.1</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.2</td>
</tr>
<tr>
<td>N free extracts</td>
<td>34.1</td>
</tr>
<tr>
<td>Starch</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Sugar</strong></td>
<td><strong>17.1</strong></td>
</tr>
<tr>
<td>Dextrines</td>
<td>16.5</td>
</tr>
</tbody>
</table>

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

### Energy [MJ/kg]

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>25.1</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>22.6 1)</td>
</tr>
</tbody>
</table>

### Fatty acids [%]

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 6:0</td>
<td>0.20</td>
</tr>
<tr>
<td>C 8:0</td>
<td>2.53</td>
</tr>
<tr>
<td>C 10:0</td>
<td>2.00</td>
</tr>
<tr>
<td>C 12:0</td>
<td>14.96</td>
</tr>
<tr>
<td>C 14:0</td>
<td>5.75</td>
</tr>
<tr>
<td>C 16:0</td>
<td>3.14</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 17:0</td>
<td>1.05</td>
</tr>
<tr>
<td>C 18:0</td>
<td>2.86</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.82</td>
</tr>
<tr>
<td>C 18:2</td>
<td>0.15</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:5</td>
<td>1.19</td>
</tr>
<tr>
<td>C 22:6</td>
<td>1.19</td>
</tr>
</tbody>
</table>

### Minerals [%]

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.86</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.60</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.34</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.20</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.90</td>
</tr>
</tbody>
</table>

### Amino acids [%]

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.64</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.81</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.19</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.00</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.89</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.26</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.73</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.63</td>
</tr>
<tr>
<td>Valine</td>
<td>1.36</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.04</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.96</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.07</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.13</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.42</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.49</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.48</td>
</tr>
<tr>
<td>Proline</td>
<td>2.29</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.65</td>
</tr>
<tr>
<td>Serine</td>
<td>1.19</td>
</tr>
</tbody>
</table>

### Vitamins per kg

- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 154 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 17 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 46 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,050 mg
- Inositol: 80 mg

### Trace elements per kg

- Iron: 151 mg
- Manganese: 90 mg
- Zinc: 60 mg
- Copper: 13 mg
- Iodine: 1.05 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

### Feed composition

On request

### Main products

- E15772-30 Meal
- E15772-34 10 mm pellets (orange colour)

*Research Diets Inc.*

**Production and sale**

ssniff Spezialdiäten GmbH  
Phone: +49-(0)2921-9658-0  
Fax: +49-(0)2921-9658-40  
E-Mail mail@ssniff.de  
www.ssniff.de / www.ssniff.com
**Description**

This experimental diet with low fat concentrations and no cholesterol additions corresponds largely to the original Clinton/Cybulsky control diet; accordingly, also that diet may serve as the control feed to the corresponding high fat diets.

**Crude Nutrients [\%]**

- Dry matter: 96.2
- Crude protein (N x 6.25): 17.1
- Crude fat: 4.1
- Crude fibre: 4.7
- Crude ash: 5.6
- N free extracts: 64.7
- Starch: 33.4
- Sugar / Dextrines: 29.4

**Energy [MJ/kg]**

- Gross Energy (GE): 18.0
- Metabolizable Energy (ME): 15.5
  1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
  2) ME calculated with the Atwater factors

**Minerals [\%]**

- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

**Fatty acids [\%]**

- C 8:0: 0.02
- C 10:0: 0.72
- C 12:0: 0.02
- C 14:0: 0.72
- C 16:0: 0.02
- C 16:1: 0.02
- C 17:0: 0.76
- C 18:0: 1.18
- C 18:2: 1.15
- C 18:3: 0.14
- C 20:0: 0.03
- C 20:1: 0.02
- C 20:4: 0.02
- C 20:5: 0.02
- C 22:6: 0.02

**Amino acids [\%]**

- Lysine: 1.39
- Methionine: 0.61
- Cystine: 0.35
- Met+Cys: 0.96
- Threonine: 0.75
- Tryptophan: 0.22
- Arginine: 0.62
- Histidine: 0.53
- Valine: 1.15
- Isoleucine: 0.88
- Leucine: 1.66
- Phenylalanine: 0.91
- Phe+Tyr: 1.81
- Glycine: 0.35
- Glutamic acid: 3.81
- Aspartic acid: 1.26
- Proline: 1.95
- Alanine: 0.55
- Serine: 1.01

**Vitamins per kg**

- Vitamin A: 15,000 IU
- Vitamin D₃: 2,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 305 µg
- Choline-Chloride: 1.050 mg
- Inositol: 80 mg

**Trace elements per kg**

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

**Main products**

- E15750-00 Meal, single ground
- E15750-04 10 mm pellets

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**Feed composition**

*On request*

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**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
ssniff® EF Clinton/Cybulsky (II) mod.
Experimental diet for rats and mice, high fat/cholesterol content

Description
This experimental diet corresponds largely to the original Clinton/Cybulsky diet, and contains high amounts of fat and of highly available carbohydrates (sugar/dextrines); on top of that 1.25 % crystalline cholesterol was added. The high fat and cholesterol contents as well as the mainly saturated fatty acids promote the development of obesity with all consequences and the induction of atherosclerotic lesions.

Crude Nutrients [%]
- Dry matter: 96.7
- Crude protein (N x 6.25): 17.1
- Crude fat: 19.5
- Crude fibre: 4.7
- Crude ash: 5.5
- N free extracts: 49.9
- Starch: 24.6
- Sugar / Dextrines: 23.4

Energy [MJ/kg]
- Gross Energy (GE): 21.5
- Metabolizable Energy (ME):
  1) 18.2
  2) 18.6

Minerals [%]
- Calcium: 0.90
- Phosphorus: 0.62
- Sodium: 0.18
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: 1.1
- C10:0: 1.2
- C12:0: 0.03
- C14:0: 4.23
- C16:0: 0.07
- C17:0: 4.61
- C18:1: 4.56
- C18:2: 1.43
- C18:3: 0.18
- C20:0: 0.17
- C20:1: 1.12
- C20:4: 1.12
- C20:5: 1.12
- C22:6: 1.12

Cholesterol: 12,500 mg/kg

Amino acids [%]
- Lysine: 1.39
- Methionine: 0.61
- Cystine: 0.35
- Met+Cys: 0.96
- Threonine: 0.75
- Tryptophan: 0.22
- Arginine: 0.62
- Histidine: 0.53
- Valine: 1.15
- Isoleucine: 0.88
- Leucine: 1.66
- Phenylalanine: 0.91
- Phe+Tyr: 1.81
- Glycine: 0.35
- Glutamic acid: 3.81
- Aspartic acid: 1.26
- Proline: 1.95
- Alanine: 0.55
- Serine: 1.01

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 2,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 30 µg
- Cobalamine (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Folic acid: 19 mg
- Vitamin B₉: 305 µg
- Choline-Chloride: 1.050 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

Main products
- E15751-30: Meal, single ground
- E15751-34: 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

¹) ME calculated according to the pig formula, Annex 4 of the German feed regulation
²) ME calculated with the Atwater factors

Feed composition
On request
**ssniff® EF Clinton/Cybulsky (III) mod.**

**Experimental diet for rats and mice, high fat/cholesterol content**

**Description**

In this experimental diet with high amounts of fat and highly available carbohydrates (sugar/dextrines), which corresponds to the original Clinton/Cybulsky diet, the energy (Atwater) distribution to the crude nutrients was modified. Also with that diet obesity with its consequences (e.g. diabetes type 2) as well as atherosclerotic lesions (plaques) will be induced.

### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.4</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>20.9</td>
</tr>
<tr>
<td>Crude fat</td>
<td>20.0</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>4.7</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>45.2</td>
</tr>
<tr>
<td>Starch</td>
<td>22.7</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>20.5</td>
</tr>
</tbody>
</table>

### Energy [MJ/kg]

- Gross Energy (GE): 21.8
- Metabolizable Energy (ME):
  - According to pig formula, Annex 4 of the German feed regulation: 18.4
  - With the Atwater factors: 18.6

### Crude Nutrients [g/kg]

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>g/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>172</td>
</tr>
<tr>
<td>Crude protein</td>
<td>360</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>18</td>
</tr>
<tr>
<td>Crude ash</td>
<td>9</td>
</tr>
<tr>
<td>N free extracts</td>
<td>90</td>
</tr>
<tr>
<td>Starch</td>
<td>105</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>50</td>
</tr>
</tbody>
</table>

### Vitamins per kg

- Vitamin A: 15,000 IU
- Vitamin D₃: 2,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 18 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 305 µg
- Choline-Chloride: 1.050 mg
- Inositol: 80 mg

### Trace elements per kg

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

### Feed composition

- **On request**

### Production and sale

ssniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors
ssniff® EF R/M acc. F3282 mod.
Experimental diet for rats and mice, very high fat content (lard)

**Description**
The experimental diet contains extremely high amounts of fat and a low (original) cholesterol content. Accordingly, that diet will quickly induce obesity and promotes the development of diabetes type 2 (NIDDM) as well as atherosclerotic lesions (plaques) in the cardiovascular system. The feeding period until first clinical symptoms might be observed depends largely on the rat or mouse strain and the previous dietary history (fat supply).

**Crude Nutrients [%]**
- Dry matter 97.2
- Crude protein (N x 6.25) 20.0
- **Crude fat** 35.6
- Crude fibre 0.3
- Crude ash 5.6
- N free extracts 35.7
- Starch 10.9
- Sugar / Dextrines 23.2

**Energy [MJ/kg]**
- Gross Energy (GE) 25.3
- Metabolizable Energy (ME) 22.4

**Minerals [%]**
- Calcium 0.90
- Phosphorus 0.62
- Sodium 0.19
- Magnesium 0.21
- Potassium 0.97

**Fatty acids [%]**
- C 8:0
- C 10:0 0.04
- C 12:0 0.08
- C 14:0 0.49
- C 16:0 8.47
- C 16:1 1.05
- C 17:0
- C 18:0 4.80
- C 18:1 14.64
- C 18:2 3.62
- C 18:3 0.36
- C 20:0
- C 20:1
- C 20:4 0.60
- C 20:5
- C 22:6

**Cholesterol [mg/kg]** 300

**Amino acids [%]**
- Lysine 1.64
- Methionine 0.70
- Cystine 0.29
- Met+Cys 0.99
- Threonine 0.89
- Tryptophan 0.26
- Arginine 0.73
- Histidine 0.63
- Valine 1.36
- Isoleucine 1.04
- Leucine 1.95
- Phenylalanine 1.07
- Phe+Tyr 2.12
- Glycine 0.42
- Glutamic acid 4.48
- Aspartic acid 1.48
- Proline 2.29
- Alanine 0.65
- Serine 1.19

**Vitamins per kg**
- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 16 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 45 mg
- Pantothenic acid 55 mg
- Folic acid 19 mg
- Biotin 310 µg
- Choline-Chloride 1,050 mg
- Inositol 80 mg

**Trace elements per kg**
- Iron 166 mg
- Manganese 97 mg
- Zinc 65 mg
- Copper 14 mg
- Iodine 1.16 mg
- Selenium 0.14 mg
- Cobalt 0.15 mg

**Main products**
- E15762-30 Meal
- E15762-34 10 mm Pellets

**Feed composition**
On request

**Production and sale**
ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**Description**

This experimental diet corresponds closely to the high fat diet # F3282, with exception of the dietary fat content, which was reduced to a normal level (5 % crude fat). Additionally, a vegetable oil was supplemented to meet the fatty acid requirements. Hence, that diet may serve as the control feed to the corresponding high fat diet.

**Crude Nutrients [%]**
- Dry matter: 96.6
- Crude protein (N x 6.25): 20.0
- Crude fat: 5.1
- Crude fibre: 0.3
- Crude ash: 5.6
- N free extracts: 65.6
- Starch: 37.6
- Sugar / Dextrines: 26.3

**Energy [MJ/kg]**
- Gross Energy (GE): 18.4
- Metabolizable Energy (ME): 17.1

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors

**Minerals [%]**
- Calcium: 0.90
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

**Fatty acids [%]**
- C 8:0: —
- C 10:0: 0.01
- C 12:0: 0.01
- C 14:0: 0.06
- C 16:0: 0.95
- C 16:1: 0.10
- C 17:0: —
- C 18:0: 0.51
- C 18:1: 1.78
- C 18:2: 1.37
- C 18:3: 0.16
- C 20:0: —
- C 20:1: —
- C 20:4: 0.05
- C 20:5: —
- C 22:6: —

**Amino acids [%]**
- Lysine: 1.64
- Methionine: 0.70
- Cystine: 0.29
- Met+Cys: 0.99
- Threonine: 0.89
- Tryptophan: 0.26
- Arginine: 0.73
- Histidine: 0.63
- Valine: 1.36
- Isoleucine: 1.04
- Leucine: 1.96
- Phenylalanine: 1.07
- Phe+Tyr: 2.12
- Glycine: 0.42
- Glutamic acid: 4.48
- Aspartic acid: 1.48
- Proline: 2.29
- Alanine: 0.65
- Serine: 1.19

**Vitamins per kg**
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 16 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 45 mg
- Pantothenic acid: 55 mg
- Folic acid: 19 mg
- Biotin: 310 µg
- Choline-Chloride: 1,050 mg
- Inositol: 80 mg

**Trace elements per kg**
- Iron: 166 mg
- Manganese: 97 mg
- Zinc: 65 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.14 mg
- Cobalt: 0.15 mg

**Main products**
- E15763-00 Meal
- E15763-04 10 mm Pellets

**Feed composition**
- On request

**Production and sale**
- ssniff Spezialdiäten GmbH
- Phone: +49-(0)2921-9658-0
- Fax: +49-(0)2921-9658-40
- E-Mail mail@ssniff.de
- www.ssniff.de / www.ssniff.com
**ssniff® SM R/M High Fat (standard)**

Experimental diet for rats and mice, with 15 % fat

**Description**
This experimental diet contains besides purified feed ingredients also conventional feedingstuffs. When fed to satiation (ad libitum) the diet supports, at least in certain rat and mouse strains, the incidence of obesity and the development of atherosclerotic lesions due to the addition of fat with mainly saturated fatty acids and cholesterol.

### Crude Nutrients [%]
- Dry matter: 90.6
- Crude protein (N x 6.25): 19.0
- **Crude fat**: 15.2
- Crude fibre: 3.4
- Crude ash: 6.3
- N free extracts: 46.8
- Starch: 25.6
- Sugar: 11.2

### Energy [MJ/kg]
- **Gross Energy (GE)**: 19.5
- **Metabolizable Energy (ME)**: 16.1 \(^1\)
- 16.8 \(^2\)

- **41 % from Carbohydrates**
- **32 % from Protein**
- **27 % from Fat**
- **47 % from Carbohydrates**
- **34 % from Fat**
- **19 % from Protein**

\(^1\) ME calculated according to the pig formula, Annex 4 of the German feed regulation

\(^2\) ME calculated with the Atwater factors

### Crude Nutrients [MJ/kg]
- **Protein**: 23.0
- **Fat**: 13.1
- **Carbohydrates**: 65.0
- **Fibre**: 3.9
- **Ash**: 8.2

### Amino acids [%]
- Lysine: 1.17
- Methionine: 0.53
- Cystine: 0.27
- Met+Cys: 0.80
- Threonine: 0.72
- Tryptophan: 0.25
- Arginine: 1.00
- Histidine: 0.49
- Valine: 1.00
- Isoleucine: 0.83
- Leucine: 1.47
- Phenylalanine: 0.90
- Phe+Tyr: 1.61
- Glycine: 0.68
- Glutamic acid: 4.00
- Aspartic acid: 1.55
- Proline: 1.52
- Alanine: 0.74
- Serine: 0.96

### Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D\(_3\): 1,000 IU
- Vitamin E: 110 mg
- Vitamin K (as menadione): 5 mg
- Vitamin C: 70 mg
- Thiamin (B\(_1\)): 16 mg
- Riboflavin (B\(_2\)): 21 mg
- Pyridoxine (B\(_6\)): 19 mg
- Cobalamin (B\(_12\)): 100 µg
- Nicotinic acid: 110 mg
- Pantothenic acid: 39 mg
- Folic acid: 7 mg
- Choline-Chloride: 1,610 mg
- Biotin: 5 mg
- Inositol: 100 mg

### Trace elements per kg
- Iron: 155 mg
- Manganese: 58 mg
- Zinc: 83 mg
- Copper: 13 mg
- Iodine: 2.1 mg
- Selenium: 0.3 mg
- Cobalt: 2.1 mg

### Cholesterol [mg/kg]
- 12,500 (orig./add.)

### Feed composition
- On request

**Main products**
- E15103-30 Meal, single ground
- E15103-34 10 mm pellets

**Production and sale**
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® SM R/M modified 5008**

Special diet for rats and mice, containing pork lard

### Description

This special mixture which based mainly on natural ingredients was designed according to the PMI 5008. Thus, composition and nutrient contents of that diet are virtually identical with the original 5008 diet.

### Crude Nutrients [\%]

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>89.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>23.3</td>
</tr>
<tr>
<td>Crude fat</td>
<td>7.0</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>4.1</td>
</tr>
<tr>
<td>Crude ash</td>
<td>7.2</td>
</tr>
<tr>
<td>N free extracts</td>
<td>47.1</td>
</tr>
<tr>
<td>Starch</td>
<td>29.2</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>5.6</td>
</tr>
</tbody>
</table>

### Energy [MJ/kg]

- **Gross Energy (GE)**: 17.4
- **Metabolizable Energy (ME)**: 13.8 \(^1\)
  - ME calculated according to the pig formula, Annex 4 of the German feed regulation
- **ME calculated with the Atwater factors**: 14.3 \(^2\)
  - ME calculated with the Atwater factors

### Crude Nutrients [\%]

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>89.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>23.3</td>
</tr>
<tr>
<td>Crude fat</td>
<td>7.0</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>4.1</td>
</tr>
<tr>
<td>Crude ash</td>
<td>7.2</td>
</tr>
<tr>
<td>N free extracts</td>
<td>47.1</td>
</tr>
<tr>
<td>Starch</td>
<td>29.2</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>5.6</td>
</tr>
</tbody>
</table>

### Minerals [\%]

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1.15</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.80</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.29</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>1.02</td>
</tr>
</tbody>
</table>

### Fatty acids [\%]

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>—</td>
</tr>
<tr>
<td>C 10:0</td>
<td>—</td>
</tr>
<tr>
<td>C 12:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.09</td>
</tr>
<tr>
<td>C 16:0</td>
<td>1.34</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.18</td>
</tr>
<tr>
<td>C 17:0</td>
<td>—</td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.57</td>
</tr>
<tr>
<td>C 18:1</td>
<td>2.12</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.86</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.23</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:2</td>
<td>0.06</td>
</tr>
<tr>
<td>C 20:5</td>
<td>0.05</td>
</tr>
<tr>
<td>C 22:6</td>
<td>0.04</td>
</tr>
</tbody>
</table>

### Amino acids [\%]

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.43</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.60</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.37</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.97</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.87</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.28</td>
</tr>
<tr>
<td>Arginine</td>
<td>1.45</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.54</td>
</tr>
<tr>
<td>Valine</td>
<td>1.13</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.99</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.66</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.04</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.74</td>
</tr>
<tr>
<td>Glycine</td>
<td>1.26</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.24</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>2.06</td>
</tr>
<tr>
<td>Proline</td>
<td>1.44</td>
</tr>
<tr>
<td>Alanine</td>
<td>1.09</td>
</tr>
<tr>
<td>Serine</td>
<td>1.04</td>
</tr>
</tbody>
</table>

### Vitamins [per kg]

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>16,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,300 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>110 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>5 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>— mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>24 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>21 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>105 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>115 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>42 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>7 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>500 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>3,450 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>100 mg</td>
</tr>
</tbody>
</table>

### Trace elements [per kg]

<table>
<thead>
<tr>
<th>Element</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>200 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>66 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>94 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>16 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>2.8 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.4 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>2.2 mg</td>
</tr>
</tbody>
</table>

### Cholesterol [mg/kg] 55

(Original content)

### Main products

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMI5008</td>
<td>10 mm pellets</td>
</tr>
<tr>
<td>PMI5008-00</td>
<td>Meal</td>
</tr>
</tbody>
</table>

### Feed composition

**On request**

### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
[www.ssniff.de](http://www.ssniff.de) / [www.ssniff.com](http://www.ssniff.com)
**ssniff® EF K  Control diet**

*Experimental diet for rabbits (control feed)*

**Description**

This experimental diet is composed of purified feed ingredients (feedingstuffs) and was designed as a control or reference feed in studies with several treatment groups. The feed is characterized by a favourable nutrient availability and a very good taste.

### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.6</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>16.2</td>
</tr>
<tr>
<td>Crude fat</td>
<td>3.8</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>16.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>54.0</td>
</tr>
<tr>
<td>Starch</td>
<td>46.1</td>
</tr>
<tr>
<td>Sugar</td>
<td>6.2</td>
</tr>
</tbody>
</table>

### Energy [MJ/kg]

<table>
<thead>
<tr>
<th>Energy</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>18.0</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td></td>
</tr>
<tr>
<td>1)</td>
<td>11.7</td>
</tr>
<tr>
<td>2)</td>
<td>13.2</td>
</tr>
</tbody>
</table>

1) ME calculated according to the cattle formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors

### Crude Nutrients [MJ/kg]

<table>
<thead>
<tr>
<th>Component</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 kJ% Carbohydrates</td>
<td></td>
</tr>
<tr>
<td>18 kJ% Protein</td>
<td></td>
</tr>
<tr>
<td>7 kJ% Fat</td>
<td></td>
</tr>
<tr>
<td>68 kJ% Carbohydrates</td>
<td></td>
</tr>
<tr>
<td>11 kJ% Fat</td>
<td></td>
</tr>
<tr>
<td>21 kJ% Protein</td>
<td></td>
</tr>
</tbody>
</table>

### Amino acids [%]

<table>
<thead>
<tr>
<th>Amino acids</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.32</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.58</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.27</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.86</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.72</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.21</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.59</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.51</td>
</tr>
<tr>
<td>Valine</td>
<td>1.09</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.84</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.58</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.86</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.71</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.34</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.61</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.20</td>
</tr>
<tr>
<td>Proline</td>
<td>1.85</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.53</td>
</tr>
<tr>
<td>Serine</td>
<td>0.96</td>
</tr>
</tbody>
</table>

### Vitamins per kg

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>32 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>17 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>50 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>55 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>20 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>305 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,030 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

### Trace elements per kg

<table>
<thead>
<tr>
<th>Trace element</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>64 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.13 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.14 mg</td>
</tr>
</tbody>
</table>

### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

### Main products

- E23000-00  Meal, single ground
- E23000-03  4 mm pellets

**Feed composition On request**

---

1) ME calculated according to the cattle formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors
**ssniff® SM K  High Fat and Cholesterol**

Experimental diet for rabbits, with 4.7 % coconut fat, 0.3 % cholesterol (C30255 mod., RD)

### Description
This experimental diet bases mainly on a rabbit chow which has been supplemented with saturated fat (coconut oil) and cholesterol. The diet will accordingly induce hyperlipidemia and will also support the development of atherosclerotic lesions.

#### Crude Nutrients [%]
- Dry matter 90.0
- Crude protein (Nx6.25) 17.2
- **Crude fat** 8.2
- Crude fibre 12.6
- Crude ash 6.9
- N free extracts 45.2
- Starch 19.4
- Sugar 6.5

#### Crude Nutrients [MJ/kg]
- Gross Energy (GE) 17.8
- Metabolizable Energy (ME) 11.5

#### Fatty acids [%]
- C 4:0 –––
- C 6:0 –––
- C 8:0 0.36
- C 10:0 0.27
- C 12:0 2.11
- C 14:0 0.82
- C 16:0 0.92
- C 16:1 0.02
- C 17:0 –––
- C 18:0 0.22
- C 18:1 0.89
- C 18:2 1.65
- C 18:3 0.32
- C 20:0 0.01
- C 20:1 0.01
- C 20:2 –––
- C 20:5 –––
- C 22:6 –––

#### Cholesterol [mg/kg]
- 3,000

#### Amino acids [%]
- Lysine 1.05
- Methionine 0.38
- Cystine 0.29
- Met+Cys 0.67
- Threonine 0.66
- Tryptophan 0.22
- Arginine 0.96
- Histidine 0.40
- Valine 0.87
- Isoleucine 0.73
- Leucine 1.29
- Phenylalanine 0.79
- Phe+Tyr 1.31
- Glycine 0.74
- Glutamic acid 3.08
- Aspartic acid 1.53
- Proline 1.16
- Alanine 0.81
- Serine 0.80

#### Vitamins per kg
- Vitamin A 15,000 IU
- Vitamin D₃ 1,000 IU
- Vitamin E 115 mg
- Vitamin K (as menadione) 5 mg
- Vitamin C ––– mg
- Thiamin (B₁) 17 mg
- Riboflavin (B₂) 24 mg
- Pyridoxine (B₆) 21 mg
- Cobalamin (B₁₂) 100 µg
- Nicotinic acid 115 mg
- Pantothenic acid 43 mg
- Folic acid 8 mg
- Biotin 630 µg
- Choline-Chloride 2,630 mg
- Inositol 100 mg

#### Trace elements per kg
- Iron 252 mg
- Manganese 63 mg
- Zinc 87 mg
- Copper 16 mg
- Iodine 2.1 mg
- Selenium 0.3 mg
- Cobalt 2.1 mg

### Feed composition
- 56 kJ% Carbohydrates
- 23 kJ% Fat
- 21 kJ% Protein

### Production and sale
ssniff Spezialdiäten GmbH
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E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

### On request
- Feed composition
- Production and sale

---

1) ME calculated according to the cattle formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
ssniff® SM K  High Fat and Cholesterol
Experimental diet for rabbits, with 4.9 % coconut fat, 1.0 % cholesterol (C30255 mod., RD)

### Description
This experimental diet, which bases on a rabbit chow, has been supplemented with high amounts of coconut oil (saturated fatty acids) and cholesterol. Consequently, the diet will promote the incidence of atherosclerotic lesions (plaques), when fed to satiation (ad libitum).

### Crude Nutrients [%]
- **Dry matter**: 90.0
- **Crude protein (N x 6.25)**: 17.2
- **Crude fat**: 9.3
- **Crude fibre**: 12.6
- **Crude ash**: 6.9
- **N free extracts**: 41.7
- **Starch**: 18.1
- **Sugar**: 4.5

### Energy [MJ/kg]
- **Gross Energy (GE)**: 18.2
- **Metabolizable Energy (ME)**: 11.6\(^1\)
- **Metabolizable Energy (ME)**: 13.5\(^2\)

\(^1\) ME calculated according to the cattle formula, Annex 4 of the German feed regulation
\(^2\) ME calculated with the Atwater factors

### Miners [%]
- **Calcium**: 1.10
- **Phosphorus**: 0.60
- **Sodium**: 0.20
- **Magnesium**: 0.20
- **Potassium**: 1.38

### Fatty acids [%]
- **C 4:0**: —
- **C 6:0**: —
- **C 8:0**: 0.37
- **C 10:0**: 0.28
- **C 12:0**: 2.20
- **C 14:0**: 0.86
- **C 16:0**: 0.94
- **C 16:1**: 0.02
- **C 17:0**: —
- **C 18:0**: 0.23
- **C 18:1**: 0.90
- **C 18:2**: 1.65
- **C 18:3**: 0.32
- **C 20:0**: 0.01
- **C 20:1**: 0.01
- **C 20:4**: —
- **C 20:5**: —
- **C 22:6**: —

### Cholesterol (add.) [mg/kg]
- **10,000**

### Amino acids [%]
- **Lysine**: 1.05
- **Methionine**: 0.38
- **Cystine**: 0.29
- **Met+Cys**: 0.67
- **Threonine**: 0.66
- **Tryptophan**: 0.22
- **Arginine**: 0.96
- **Histidine**: 0.40
- **Valine**: 0.87
- **Isoleucine**: 0.73
- **Leucine**: 1.29
- **Phenylalanine**: 0.79
- **Phe+Tyr**: 1.31
- **Glycine**: 0.74
- **Glutamic acid**: 3.08
- **Aspartic acid**: 1.53
- **Proline**: 1.16
- **Alanine**: 0.81
- **Serine**: 0.80

### Vitamins per kg
- **Vitamin A**: 15,000 IU
- **Vitamin D_3**: 1,000 IU
- **Vitamin E**: 115 mg
- **Vitamin K (as menadione)**: 5 mg
- **Vitamin C**: ---- mg
- **Thiamin (B_1)**: 17 mg
- **Riboflavin (B_2)**: 24 mg
- **Pyridoxine (B_6)**: 21 mg
- **Cobalamin (B_12)**: 100 µg
- **Nicotinic acid**: 115 mg
- **Pantothenic acid**: 43 mg
- **Folic acid**: 8 mg
- **Biotin**: 630 µg
- **Choline-Chloride**: 2,630 mg
- **Inositol**: 100 mg

### Trace elements per kg
- **Iron**: 252 mg
- **Manganese**: 63 mg
- **Zinc**: 87 mg
- **Copper**: 16 mg
- **Iodine**: 2.1 mg
- **Selenium**: 0.3 mg
- **Cobalt**: 2.1 mg

### Feed composition
On request

### Main products
- E23113-20  Meal, single ground
- E23113-23  4 mm pellets
- E23113-24  short 10 mm pellets

### Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
Description
This experimental diet is composed of purified feed ingredients (feedingstuffs) and was designed as a control or reference feed in studies with several treatment groups. The feed is characterized by a favourable nutrient availability and a very good taste.

Crude Nutrients [%]
- Dry matter: 95.4
- Crude protein (N x 6.25): 18.4
- Crude fat: 3.6
- Crude fibre: 13.4
- Crude ash: 5.9
- N free extracts: 54.2
- Starch: 46.4
- Sugar: 5.9

Energy [MJ/kg]
- Gross Energy (GE): 18.0
- Metabolizable Energy (ME): 11.7

Amino acids [%]
- Lysine: 1.50
- Methionine: 0.65
- Cystine: 0.28
- Met+Cys: 0.93
- Threonine: 0.91
- Tryptophan: 0.23
- Lys: Met+Cys: 0.62
- Lys: Thr: 0.61
- Lys: Trp: 0.16

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,200 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 1,200 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 17 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 50 mg
- Pantothenic acid: 55 mg
- Folic acid: 20 mg
- Biotin: 305 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

Main products
- E22000-00 Meal, single ground
- E22000-03 4 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the cattle formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
snniff® EF Hamster Control

Experimental diet for hamsters

Description
This purified diet may serve as control feed in studies using high fat (purified) diets or diets with high cholesterol contents.

Crude Nutrients [%]
- Dry matter: 97.1
- Crude protein (N x 6.25): 17.4
- Crude fat: 5.1
- Crude fibre: 9.0
- Crude ash: 5.6
- N free extracts: 51.5
- Starch: 42.9
- Sugar / Dextrin: 13.1

Energy [MJ/kg]
- Gross Energy (GE): 18.4
- Metabolizable Energy (ME): 14.0

Minerals [%]
- Calcium: 0.92
- Phosphorus: 0.62
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.96

Fatty acids [%]
- C 4:0: —
- C 6:0: —
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.55
- C 18:0: 0.23
- C 18:1: 1.32
- C 18:2: 2.65
- C 18:3: 0.33
- C 20:0: 0.03
- C 20:1: —
- C 20:4: —
- C 20:5: —
- C 22:6: —

Amino acids [%]
- Lysine: 1.43
- Methionine: 0.62
- Arginine: 0.63
- Histidine: 0.55
- Valine: 1.18
- Isoleucine: 0.90
- Leucine: 1.70
- Phenylalanine: 0.93
- Phe+Tyr: 1.85
- Glycine: 0.36
- Glutamic acid: 3.90
- Aspartic acid: 1.29
- Prolin: 2.00
- Alanine: 0.57
- Serine: 1.03

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: ---- mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 17 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 50 mg
- Folic acid: 20 mg
- Biotin: 508 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

Production and sale
snniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@snniff.de
www.ssniff.de / www.ssniff.com

Main products
E21000-00 Meal
E21000-04 10 mm pellets

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF Hamster High Fat**

**Experimental diet for hamsters with high fat content**

**Description**

This experimental diet consisting of purified feed ingredients contains high amounts of fat with mainly saturated middle-chain fatty acids. The feed was supplemented with crystalline cholesterol. Accordingly, the diet will promote the incidence of obesity and atherosclerotic lesions (plaques), when fed to satiation (ad libitum).

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>97.1</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>17.4</td>
</tr>
<tr>
<td>Crude fat</td>
<td>15.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>9.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>49.9</td>
</tr>
<tr>
<td>Starch</td>
<td>29.5</td>
</tr>
<tr>
<td>Sugar / Dextrin</td>
<td>18.9</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>20.8</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>15.8</td>
</tr>
</tbody>
</table>

1) **ME calculated according to the pig formula, Annex 4 of the German feed regulation**

2) **ME calculated with the Atwater factors**

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.92</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.62</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.96</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td></td>
</tr>
<tr>
<td>C 6:0</td>
<td>0.08</td>
</tr>
<tr>
<td>C 8:0</td>
<td>0.91</td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.72</td>
</tr>
<tr>
<td>C 12:0</td>
<td>5.39</td>
</tr>
<tr>
<td>C 14:0</td>
<td>2.08</td>
</tr>
<tr>
<td>C 16:0</td>
<td>1.37</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C 17:0</td>
<td></td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.48</td>
</tr>
<tr>
<td>C 18:1</td>
<td>1.61</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.81</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.20</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:1</td>
<td></td>
</tr>
<tr>
<td>C 20:4</td>
<td></td>
</tr>
<tr>
<td>C 20:5</td>
<td></td>
</tr>
<tr>
<td>C 22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.43</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.62</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.28</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.90</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.77</td>
</tr>
<tr>
<td>Lys : Met+Cys</td>
<td>0.63</td>
</tr>
<tr>
<td>Lys : Thr</td>
<td>0.54</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.16</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.63</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.55</td>
</tr>
<tr>
<td>Valine</td>
<td>1.18</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.90</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.70</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.93</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.85</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.36</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.90</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.29</td>
</tr>
<tr>
<td>Proline</td>
<td>2.00</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.57</td>
</tr>
<tr>
<td>Serine</td>
<td>1.03</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D&lt;sub&gt;3&lt;/sub&gt;</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>---- mg</td>
</tr>
<tr>
<td>Thiamin (B&lt;sub&gt;1&lt;/sub&gt;)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B&lt;sub&gt;2&lt;/sub&gt;)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B&lt;sub&gt;6&lt;/sub&gt;)</td>
<td>17 mg</td>
</tr>
<tr>
<td>Cobalamin (B&lt;sub&gt;12&lt;/sub&gt;)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>50 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>55 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>20 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>308 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

**Trace elements per kg**

<table>
<thead>
<tr>
<th>Element</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>64 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.14 mg</td>
</tr>
</tbody>
</table>

**Cholesterol [mg/kg] 1,000 (addition)**

**Main products**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E21113-30</td>
<td>Meal</td>
</tr>
<tr>
<td>E21113-34</td>
<td>10 mm pellets</td>
</tr>
</tbody>
</table>

**Feed composition On request**

**Production and sale**

ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
ssniff® SM Ha  High Fat

Experimental diet for hamsters with medium high fat content

**Description**
This experimental diet, which bases on a conventional hamster chow, was supplemented with around 5% coconut oil (saturated fatty acids). Accordingly, the diet will promote the incidence of obesity with all metabolic consequences (e.g. metabolic syndrome), when fed to satiation (ad libitum).

**Crude Nutrients [%]**
- Dry matter 89.2
- Crude protein (N x 6.25) 19.8
- **Crude fat** 8.2
- Crude fibre 7.2
- Crude ash 6.9
- N free extracts 47.2
- Starch 28.5
- Sugar 4.5

**Energy [MJ/kg]**
- Gross Energy (GE) 17.7
- Metabolizable Energy (ME) 13.1

**Minerals [%]**
- Calcium 1.10
- Phosphorus 0.70
- Sodium 0.19
- Magnesium 0.21
- Potassium 1.16

**Fatty acids [%]**
- C 4:0 —
- C 6:0 0.03
- C 8:0 0.42
- C 10:0 0.33
- C 12:0 2.49
- C 14:0 0.96
- C 16:0 0.90
- C 16:1 0.02
- C 17:0 —
- C 18:0 0.22
- C 18:1 0.83
- C 18:2 1.43
- C 18:3 0.26
- C 20:0 0.01
- C 20:1 0.01
- C 20:4 —
- C 20:5 —
- C 22:6 —

**Amino acids [%]**
- Lysine 1.18
- Methionine 0.42
- Cystine 0.32
- Met+Cys 0.74
- Threonine 0.75
- Lys : Met+Cys 1:0.63
- Lys : Thr 1:0.63
- Tryptophan 0.26
- Arginine 1.12
- Histidine 0.46
- Valine 0.97
- Isoleucine 0.83
- Leucine 1.42
- Phenylalanine 0.90
- Phe+Tyr 1.53
- Glycine 0.80
- Glutamic acid 3.79
- Aspartic acid 1.75
- Proline 1.32
- Alanine 0.83
- Serine 0.94

**Vitamins per kg**
- Vitamin A 16,000 IU
- Vitamin D₃ 1,100 IU
- Vitamin E 125 mg
- Vitamin K (as menadione) 5 mg
- Vitamin C — mg
- Thiamin (B₁) 18 mg
- Riboflavin (B₂) 25 mg
- Pyridoxine (B₆) 22 mg
- Cobalamin (B₁₂) 110 µg
- Nicotinic acid 125 mg
- Pantothenic acid 45 mg
- Folic acid 8 mg
- Biotin 585 µg
- Choline-Chloride 2,800 mg
- Inositol 100 mg

**Trace elements per kg**
- Iron 217 mg
- Manganese 68 mg
- Zinc 93 mg
- Copper 16 mg
- Iodine 2.3 mg
- Selenium 0.4 mg
- Cobalt 2.2 mg

**Cholesterol [mg/kg]** —

**Main products**
- E21411-30 Meal, single ground
- E21411-34 10 mm pellets

**Feed composition**
- On request

**Production and sale**
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
ssniff® SM Ha   High Fat

Experimental diet for hamsters with very high fat content

Description
This experimental diet, which bases on a conventional hamster chow, was supplemented with 10 % coconut oil (saturated fatty acids). Accordingly, the diet will promote the incidence of obesity with all metabolic consequences (e.g. metabolic syndrome), when fed to satiation (ad libitum).

Crude Nutrients [%]
- Dry matter 89.9
- Crude protein (N x 6.25) 19.6
- Crude fat 12.5
- Crude fibre 7.5
- Crude ash 6.8
- N free extracts 43.5
- Starch 26.6
- Sugar 4.2

Energy [MJ/kg]
- Gross Energy (GE) 18.8
- Metabolizable Energy (ME) 14.0

Minerals [%]
- Calcium 1.10
- Phosphorus 0.70
- Sodium 0.19
- Magnesium 0.21
- Potassium 1.16

Fatty acids [%]
- C 4:0 —
- C 6:0 0.06
- C 8:0 0.76
- C 10:0 0.60
- C 12:0 4.49
- C 14:0 1.73
- C 16:0 1.27
- C 16:1 0.01
- C 17:0 —
- C 18:0 0.35
- C 18:1 1.10
- C 18:2 1.44
- C 18:3 0.25
- C 20:0 0.01
- C 20:1 0.01
- C 20:4 —
- C 20:5 —
- C 22:6 —

Amino acids [%]
- Lysine 1.20
- Methionine 0.53
- Cystine 0.31
- Met+Cys 0.83
- Threonine 0.75
- Lys : Met+Cys 1: 0.69
- Lys : Thr 1: 0.63
- Tryptophan 0.26
- Arginine 1.10
- Histidine 0.47
- Valine 0.98
- Isoleucine 0.83
- Leucine 1.43
- Phenylalanine 0.90
- Phe+Tyr 1.55
- Glycine 0.78
- Glutamic acid 3.80
- Aspartic acid 1.72
- Proline 1.36
- Alanine 0.81
- Serine 0.95

Vitamins per kg
- Vitamin A 15,500 IU
- Vitamin D₃ 1,050 IU
- Vitamin E 121 mg
- Vitamin K (as menadione) 5 mg
- Vitamin C — mg
- Thiamin (B₁) 17 mg
- Riboflavin (B₂) 24 mg
- Pyridoxine (B₆) 21 mg
- Cobalamin (B₁₂) 105 µg
- Nicotinic acid 123 mg
- Pantothenic acid 44 mg
- Folic acid 7 mg
- Biotin 560 µg
- Choline-Chloride 2,650 mg
- Inositol 100 mg

Trace elements per kg
- Iron 206 mg
- Manganese 65 mg
- Zinc 89 mg
- Copper 15 mg
- Iodine 2.2 mg
- Selenium 0.4 mg
- Cobalt 2.2 mg

Cholesterol [mg/kg] —
(addition, optional)

Feed composition
On request

Main products
E21412-30 Meal, single ground
E21412-34 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF Hd Control**

**Experimental diet for dogs (control feed)**

**Description**

This experimental diet bases mainly on purified feed ingredients (purified diet). It is therefore ideally composed for studies, in which an exact adjustment of the crude nutrient concentrations is required. Moreover, the diet is also suitable for growing or pre-adult dogs, because of its excellent nutrient availability. The feed may serve as a control or reference diet or as the basis for other purified diets. Additionally, a prebiotic (oligofructose) was supplemented to stabilize and to improve the gut health; it can be removed on demand.

### Crude Nutrients [%]
- Dry matter: 95.2
- Crude protein (N x 6.25): 21.0
- Crude fat: 5.7
- Crude fibre: 3.4
- Crude ash: 6.7
- N free extracts: 58.0
- Starch: 46.0
- Sugar: 9.9

### Energy [MJ/kg]
- Gross Energy (GE): 18.1
- Metabolizable Energy (ME): 13.6

### Metabolizable Energy (ME)

- 62 % from Carbohydrates
- 23 % from Protein
- 15 % from Fat

### Crude Nutrients [%]
- Dry matter: 95.2
- Crude protein (N x 6.25): 21.0
- Crude fat: 5.7
- Crude fibre: 3.4
- Crude ash: 6.7
- N free extracts: 58.0
- Starch: 46.0
- Sugar: 9.9

### Amino acids [%]
- Lysine: 1.71
- Methionine: 0.74
- Cystine: 0.39
- Met+Cys: 1.13
- Threonine: 0.92
- Tryptophan: 0.27
- Arginine: 0.77
- Histidine: 0.66
- Valine: 1.42
- Isoleucine: 1.06
- Leucine: 2.05
- Phenylalanine: 1.12
- Phe+Tyr: 2.21
- Glycine: 0.48
- Glutamic acid: 4.59
- Aspartic acid: 1.56
- Proline: 2.35
- Alanine: 0.72
- Serine: 1.23

### Vitamins per kg
- Vitamin A: 18,000 IU
- Vitamin D₃: 1,800 IU
- Vitamin E: 180 mg
- Vitamin K (as menadione): 23 mg
- Vitamin C: 36 mg
- Thiamin (B₁): 19 mg
- Riboflavin (B₂): 20 mg
- Pyridoxine (B₆): 20 mg
- Cobalamin (B₁₂): 36 µg
- Nicotinic acid: 60 mg
- Pantothenic acid: 66 mg
- Folic acid: 24 mg
- Biotin: 370 µg
- Choline-Chloride: 1,280 mg
- Inositol: 95 mg

### Trace elements per kg
- Iron: 179 mg
- Manganese: 98 mg
- Zinc: 66 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.15 mg
- Cobalt: 0.15 mg

### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9858-0
Fax: +49-(0)2921-9858-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Main products**
- E32000-00 Meal, single ground
- E32000-04 10 mm pellets

---

¹) ME calculated with the modified Atwater factors for dogs and cats
²) ME calculated with the Atwater factors
**ssniff® EF Hd High Fat**

**Experimental diet for dogs, 25 % fat, middle- to long-chain, saturated fatty acids**

**Description**

This experimental diet, which bases on the purified control feed (E32000), was supplemented with high amounts of fat consisting mainly of middle- to long-chain, saturated fatty acids. The feed will therefore strongly promote the incidence of obesity and hyperlipidemia in the dog. The development of diabetes type 2 (NIDDM) will be also supported, however, it will take a long time and depends on several exogenous factors, e.g. the previous dietary history (dietary fat content, fat source).

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.5</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>21.0</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td>24.8</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.9</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.8</td>
</tr>
<tr>
<td>N free extracts</td>
<td>39.7</td>
</tr>
<tr>
<td>Starch</td>
<td>25.4</td>
</tr>
<tr>
<td>Sugar</td>
<td>9.7</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

<table>
<thead>
<tr>
<th>Source of Energy</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>22.6</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>17.7</td>
</tr>
</tbody>
</table>

**Metabolizable Energy (ME)**

- 33 % from Carbohydrates
- 17 % from Protein
- 50 % from Fat

**Description of Crude Nutrients**

1. ME calculated with the modified Atwater factors for dogs and cats
2. ME calculated with the Atwater factors

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1.15</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.80</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.20</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.98</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 4:0</td>
<td></td>
</tr>
<tr>
<td>C 6:0</td>
<td>0.10</td>
</tr>
<tr>
<td>C 8:0</td>
<td>1.19</td>
</tr>
<tr>
<td>C 10:0</td>
<td>0.94</td>
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<tr>
<td>C 12:0</td>
<td>7.01</td>
</tr>
<tr>
<td>C 14:0</td>
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</tr>
<tr>
<td>C 16:0</td>
<td>3.19</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.17</td>
</tr>
<tr>
<td>C 17:0</td>
<td>0.07</td>
</tr>
<tr>
<td>C 18:0</td>
<td>1.64</td>
</tr>
<tr>
<td>C 18:1</td>
<td>4.07</td>
</tr>
<tr>
<td>C 18:2</td>
<td>2.04</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.22</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C 20:1</td>
<td></td>
</tr>
<tr>
<td>C 20:4</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:5</td>
<td></td>
</tr>
<tr>
<td>C 22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Cholesterol (original) [mg/kg]**

- 58

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.71</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.74</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.39</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.13</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.92</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.27</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.77</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.66</td>
</tr>
<tr>
<td>Valine</td>
<td>1.42</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.06</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.05</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.12</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.21</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.48</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>4.59</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.56</td>
</tr>
<tr>
<td>Proline</td>
<td>2.35</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.72</td>
</tr>
<tr>
<td>Serine</td>
<td>1.23</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A: 18,000 IU
- Vitamin D₃: 1,800 IU
- Vitamin E: 180 mg
- Vitamin K (as menadione): 23 mg
- Vitamin C: 36 mg
- Thiamin (B₁): 19 mg
- Riboflavin (B₂): 20 mg
- Pyridoxine (B₆): 20 mg
- Cobalamin (B₁₂): 36 µg
- Nicotinic acid: 60 mg
- Pantothenic acid: 66 mg
- Folic acid: 24 mg
- Biotin: 370 µg
- Choline-Chloride: 1,280 mg
- Inositol: 95 mg

**Trace elements per kg**

- Iron: 179 mg
- Manganese: 98 mg
- Zinc: 66 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.15 mg
- Cobalt: 0.15 mg

**Main products**

- E32114-30 Meal, single ground
- E32114-34 10 mm pellets

**Feed composition**

- On request

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de

www.ssniff.de / www.ssniff.com
ssniff® EF Hd  High Fat
Experimental diet for dogs, 20 % fat, saturated fatty acids

Description
This experimental diet, which bases on the purified control feed (E32000), was supplemented with high amounts of fat consisting of long-chain, mainly saturated fatty acids. The feed will therefore strongly promote the incidence of obesity and hyperlipidemia in the dog. The development of diabetes type 2 (NIDDM) may be also supported, however, it will take a long time and may vary depending on several exogenous factors, e.g. the previous dietary history (dietary fat content, fat source).

Crude Nutrients [%]
- Dry matter 95.9
- Crude protein (N x 6.25) 21.0
- Crude fat 20.1
- Crude fibre 3.9
- Crude ash 6.7
- N free extracts 43.9
- Starch 32.1
- Sugar 9.7

Energy [MJ/kg]
- Gross Energy (GE) 21.5
- Metabolizable Energy (ME) 16.7

Amino acids [%]
- Lysine 1.71
- Methionine 0.74
- Cystine 0.39
- Met+Cys 1.13
- Threonine 0.92
- Tryptophan 0.27
- Arginine 0.77
- Histidine 0.66
- Valine 1.42
- Isoleucine 1.06
- Leucine 2.05
- Phenylalanine 1.12
- Phe+Tyr 2.21
- Glycine 0.48
- Glutamic acid 4.59
- Aspartic acid 1.56
- Proline 2.35
- Alanine 0.72
- Serine 1.23

Minerals [%]
- Calcium 1.15
- Phosphorus 0.80
- Sodium 0.20
- Magnesium 0.21
- Potassium 0.98

Fatty acids [%]
- C 8:0 —
- C10:0 —
- C12:0 0.02
- C14:0 0.54
- C16:0 4.44
- C16:1 0.42
- C17:0 0.19
- C18:0 3.01
- C18:1 6.93
- C18:2 2.54
- C18:3 0.33
- C20:0 0.03
- C20:1 0.01
- C20:4 0.04
- C20:5 —
- C22:6 —

Cholesterol 152
(original) [mg/kg]

Vitamins per kg
- Vitamin A 18,000 IU
- Vitamin D₃ 1,800 IU
- Vitamin E 180 mg
- Vitamin K (as menadione) 23 mg
- Vitamin C 36 mg
- Thiamin (B₁) 19 mg
- Riboflavin (B₂) 20 mg
- Pyridoxine (B₆) 20 mg
- Cobalamin (B₁₂) 36 µg
- Nicotinic acid 60 mg
- Pantothenic acid 66 mg
- Folic acid 24 mg
- Biotin 370 µg
- Choline-Chloride 1,280 mg
- Inositol 95 mg

Trace elements per kg
- Iron 179 mg
- Manganese 98 mg
- Zinc 66 mg
- Copper 14 mg
- Iodine 1.2 mg
- Selenium 0.15 mg
- Cobalt 0.15 mg

Main products
E32124-30 Meal, single ground
E32124-34 10 mm pellets

Feed composition
On request

Production and sale
ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

¹) ME calculated with the modified Atwater factors for dogs and cats
²) ME calculated with the Atwater factors
ssniff® SM Hd  High Fat and Cholesterol
Experimental diet for dogs, high fat and cholesterol contents

Description
This experimental diet, which bases mainly on a conventional dog feed (Hd-H), was supplemented with very high amounts of cholesterol and a fat source, which consists mainly of long-chain, saturated fatty acids. The feed will therefore strongly promote the incidence of obesity and hyperlipidemia in the dog. The development of diabetes type 2 (NIDDM) and atherosclerotic lesions (plaques) may be also supported, however, it will take a long time and may vary depending on several endogenous and exogenous factors, e.g. the previous dietary history (dietary fat content, fat source).

Crude Nutrients [%]
- Dry matter: 92.3
- Crude protein (N x 6.25): 23.6
- Crude fat: 22.0
- Crude fibre: 3.1
- Crude ash: 6.2
- N free extracts: 37.4
- Starch: 26.5
- Sugar: 5.4

Energy [MJ/kg]
- Gross Energy (GE): 21.6
- Metabolizable Energy (ME): 16.8 ¹)
- Metabolizable Energy (ME): 18.5 ²)

Minerals [%]
- Calcium: 1.21
- Phosphorus: 0.89
- Sodium: 0.45
- Magnesium: 0.16
- Potassium: 0.75

Fatty acids [%]
- C 8:0: 0.06
- C10:0: 0.05
- C12:0: 0.37
- C14:0: 0.55
- C16:0: 3.70
- C16:1: 0.50
- C17:0: 0.12
- C18:0: 2.05
- C18:1: 5.66
- C18:2: 2.84
- C18:3: 0.29
- C20:0: 0.02
- C20:1: 0.06
- C20:4: 0.03
- C20:5: 0.09
- C22:6: 0.08

Cholesterol 40,060 (orig./add.) [mg/kg]

Amino acids [%]
- Lysine: 1.43
- Methionine: 0.58
- Cystine: 0.32
- Met+Cys: 0.90
- Threonine: 0.94
- Tryptophan: 0.25
- Arginine: 1.42
- Histidine: 0.61
- Valine: 1.28
- Isoleucine: 0.95
- Leucine: 2.03
- Phenylalanine: 1.11
- Phe+Tyr: 1.81
- Glycine: 1.79
- Glutamic acid: 3.76
- Aspartic acid: 1.83
- Proline: 1.61
- Alanine: 1.47
- Serine: 1.02

Vitamins per kg
- Vitamin A: 26,000 IU
- Vitamin D₃: 1,400 IU
- Vitamin E: 125 mg
- Vitamin K (as menadione): 19 mg
- Vitamin C: ---- mg
- Thiamin (B₁): 81 mg
- Riboflavin (B₂): 32 mg
- Pyridoxine (B₆): 29 mg
- Cobalamin (B₁₂): 170 µg
- Nicotinic acid: 145 mg
- Pantothenic acid: 55 mg
- Folic acid: 9 mg
- Biotin: 610 µg
- Choline-Chloride: 2,730 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 219 mg
- Manganese: 44 mg
- Zinc: 80 mg
- Copper: 13 mg
- Iodine: 3.1 mg
- Selenium: 0.4 mg
- Cobalt: 2.0 mg

Production and sale
ssniff Spezialdiäten GmbH
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Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

Main products
- E32125-30  Meal, single ground
- E32125-34  10 mm pellets

¹) ME calculated with the modified Atwater factors for dogs and cats
²) ME calculated with the Atwater factors

Energy
- 33 % from Carbohydrates
- 20 % from Protein
- 47 % from Fat

Carbohydrates
- 34 % from Carbohydrates
- 21 % from Protein
- 45 % from Fat

Feed composition
On request

Notes:
- Crude Nutrients and Energy have been calculated with the modified Atwater factors for dogs and cats.
- vitamins and trace elements have been calculated with the Atwater factors.

For more information, please contact ssniff Spezialdiäten GmbH.
ssniff® EF Mpig Control
Experimental diet for minipigs, control feed

Description
This experimental diet consists of purified feed ingredients; the feed is therefore ideally composed for studies, in which an exact adjustment of the crude nutrient concentrations is required. Because of the excellent dietary nutrient availability the nutrient requirements will be fully met not only in adults, but also in growing minipigs. The daily feed intake of minipigs should always be restricted to avoid obesity and bone disorders. The feed may serve as a control or reference diet and also as the basis for other purified diets.

Crude Nutrients [%]
- Dry matter: 95.6
- Crude protein (N x 6.25): 16.5
- Crude fat: 3.5
- Crude ash: 5.6
- N free extracts: 58.0
- Starch: 47.3
- Sugar / Dextrines: 8.9

Energy [MJ/kg]
- Gross Energy (GE): 17.9
- Metabolizable Energy (ME): 13.3

Meatabolizable Energy (ME)
- 63 % from Carbohydrates
- 28 % from Protein
- 9 % from Fat

Vitamins per kg
- Vitamin A: 15,000 IU
- Vitamin D₃: 1,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 17 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 50 mg
- Pantothenic acid: 55 mg
- Folic acid: 20 mg
- Biotin: 305 µg
- Choline-Chloride: 1,040 mg
- Inositol: 80 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 64 mg
- Copper: 14 mg
- Iodine: 1.2 mg
- Selenium: 0.14 mg
- Cobalt: 0.14 mg

Minerals [%]
- Calcium: 0.89
- Phosphorus: 0.63
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.97

Fatty acids [%]
- C 8:0: —
- C 10:0: —
- C 12:0: —
- C 14:0: 0.02
- C 16:0: 0.38
- C 16:1: 0.02
- C 17:0: —
- C 18:0: 0.16
- C 18:1: 0.91
- C 18:2: 1.80
- C 18:3: 0.22
- C 20:0: 0.02
- C 20:1: —
- C 20:4: —
- C 22:6: —

Amino acids [%]
- Lysine: 1.33
- Methionine: 0.59
- Met+Cys: 0.82
- Threonine: 0.90
- Tryptophan: 0.26
- Lys : Met+Cys: 1 : 0.62
- Lys : Thr: 1 : 0.68
- Lys : Trp: 1 : 0.19
- Arginine: 0.59
- Histidine: 0.51
- Valine: 1.10
- Isoleucine: 0.84
- Leucine: 1.59
- Phenylalanine: 0.86
- Phe+Tyr: 1.72
- Glycine: 0.34
- Glutamic acid: 3.63
- Aspartic acid: 1.20
- Proline: 1.86
- Alanine: 0.53
- Serine: 0.96

Cholesterol [mg/kg]: —

Main products
- E41000-00: Meal, single ground
- E41000-03: 4 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF Mpig with 30 % Fat**

Experimental diet for minipigs, high fat and cholesterol contents, saturated long-chain fatty acids

**Description**

The high dietary energy density, which was achieved by fat addition (30 % CL), and the saturated fatty acids in this experimental diet will promote the incidence of obesity with all resulting metabolic disorders, i.e. Metabolic Syndrome, diabetes type 2 (NIDDM), atherosclerotic lesions (plaques) etc. The incidence and extent of the atherosclerotic lesions can be accelerated by increasing the cholesterol supplementation. When changing from a conventional maintenance or breeding feed to that diet, it is recommended to impose a strongly restricted feeding with gradually increasing daily rations over at least 5 days to avoid gastro-intestinal disturbances; moreover, it is useful to blend additionally the experimental diet with the previous feed over 3 - 5 days (2:1, 1:1, 1:2).

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.6</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>16.4</td>
</tr>
<tr>
<td>Crude fat</td>
<td>30.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>6.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>38.5</td>
</tr>
<tr>
<td>Starch</td>
<td>26.2</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>10.6</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- Gross Energy (GE) 23.9
- Metabolizable Energy (ME) 20.6

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.89</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.63</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C10:0</td>
<td></td>
</tr>
<tr>
<td>C12:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C14:0</td>
<td>0.99</td>
</tr>
<tr>
<td>C16:0</td>
<td>7.49</td>
</tr>
<tr>
<td>C16:1</td>
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</tr>
<tr>
<td>C17:0</td>
<td>0.36</td>
</tr>
<tr>
<td>C18:0</td>
<td>5.29</td>
</tr>
<tr>
<td>C18:1</td>
<td>10.98</td>
</tr>
<tr>
<td>C18:2</td>
<td>0.75</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.13</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C20:4</td>
<td>0.07</td>
</tr>
<tr>
<td>C20:5</td>
<td></td>
</tr>
<tr>
<td>C22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.33</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.59</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.90</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.26</td>
</tr>
<tr>
<td>Lys : Met+Cys</td>
<td>1 : 0.62</td>
</tr>
<tr>
<td>Lys : Thr</td>
<td>1 : 0.68</td>
</tr>
<tr>
<td>Lys : Trp</td>
<td>1 : 0.19</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.59</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.51</td>
</tr>
<tr>
<td>Valine</td>
<td>1.10</td>
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<tr>
<td>Isoleucine</td>
<td>0.84</td>
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<tr>
<td>Leucine</td>
<td>1.59</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.86</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.72</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.34</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.63</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.20</td>
</tr>
<tr>
<td>Proline</td>
<td>1.86</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.53</td>
</tr>
<tr>
<td>Serine</td>
<td>0.96</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A 15,000 IU
- Vitamin D₃ 1,500 IU
- Vitamin E 150 mg
- Vitamin K (as menadione) 20 mg
- Vitamin C 30 mg
- Thiamin (B₁) 16 mg
- Riboflavin (B₂) 16 mg
- Pyridoxine (B₆) 17 mg
- Cobalamin (B₁₂) 30 µg
- Nicotinic acid 50 mg
- Pantothenic acid 55 mg
- Folic acid 20 mg
- Biotin 305 µg
- Choline-Chloride 1,040 mg
- Inositol 80 mg

**Trace elements per kg**

- Iron 166 mg
- Manganese 98 mg
- Zinc 64 mg
- Copper 14 mg
- Iodine 1.2 mg
- Selenium 0.14 mg
- Cobalt 0.14 mg

**Main products**

- E41126-30 Meal, single ground
- E41126-33 4 mm pellets

**Production and sale**

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---

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors
**ssniff® EF Mpig with 30 % Fat, 20 % Sugar**

Experimental diet for minipigs, high fat, sugar and cholesterol contents, saturated long-chain fatty acids

### Description

As a result of the high sugar and fat content and the mainly saturated long-chain fatty acids this experimental diet will promote the incidence of obesity with all resulting metabolic disorders, i.e. Metabolic Syndrome, diabetes type 2 (NIDDM), atherosclerotic lesions (plaques). The incidence and extent of the atherosclerotic lesions can be accelerated by increasing the cholesterol supplementation. When changing from a conventional maintenance or breeding feed to that diet, it is recommended to impose a strongly restricted feeding with gradually increasing daily rations over at least 5 days to avoid gastro-intestinal disturbances; moreover, it is useful to blend additionally the experimental diet with the previous feed over 3 - 5 days (2:1, 1:1, 1:2).

### Crude Nutrients [%]

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>97.1</td>
</tr>
<tr>
<td>Crude protein (Nx6.25)</td>
<td>16.4</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td>30.2</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>6.0</td>
</tr>
<tr>
<td>Crude ash</td>
<td>5.6</td>
</tr>
<tr>
<td>N free extracts</td>
<td>38.5</td>
</tr>
<tr>
<td>Starch</td>
<td>16.9</td>
</tr>
<tr>
<td><strong>Sugar / Dextrines</strong></td>
<td>20.3</td>
</tr>
</tbody>
</table>

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

2) ME calculated with the Atwater factors

### Energy [MJ/kg]

- **Gross Energy (GE)** 24.0
- **Metabolizable Energy (ME)**
  - 29% from Carbohydrates
  - 19% from Protein
  - 19.7
  - 52% from Fat

### Amino acids [%]

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.33</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.59</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.82</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.90</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.26</td>
</tr>
<tr>
<td>Lys : Met+Cys</td>
<td>1 : 0.62</td>
</tr>
<tr>
<td>Lys : Thr</td>
<td>1 : 0.68</td>
</tr>
<tr>
<td>Lys : Trp</td>
<td>1 : 0.19</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.59</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.51</td>
</tr>
<tr>
<td>Valine</td>
<td>1.10</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.84</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.59</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.86</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>1.72</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.34</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.63</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.20</td>
</tr>
<tr>
<td>Proline</td>
<td>1.86</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.53</td>
</tr>
<tr>
<td>Serine</td>
<td>0.96</td>
</tr>
</tbody>
</table>

### Vitamins per kg

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,500 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>150 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>30 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>17 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>30 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>50 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>55 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>20 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>305 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,040 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>80 mg</td>
</tr>
</tbody>
</table>

### Trace elements per kg

<table>
<thead>
<tr>
<th>Trace element</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>64 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.14 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.14 mg</td>
</tr>
</tbody>
</table>

### Feed composition

**On request**

### Main products

- E41626-30 Meal, single ground
- E41626-33 4 mm pellets

### Production and sale

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® SM Mpig with 30 % Fat**

Experimental diet for minipigs, high fat and cholesterol contents, saturated long-chain fatty acids

**Description**

This experimental diet bases also on conventional feedingstuffs (feed ingredients). The feed will promote the incidence of obesity with all metabolic disorders, i.e. Metabolic Syndrome, diabetes type 2 (NIDDM), atherosclerotic lesions (plaques) etc., because of the high fat content with mainly saturated, long-chain fatty acids. When changing from the conventional low fat maintenance or breeding feed to that diet, it is recommended to restrict strongly the feed intake with gradually increasing daily rations over at least 5 days to avoid gastro-intestinal disturbances; it is useful to blend additionally the experimental diet with the previous feed over 3 - 5 days (2:1, 1:1, 1:2).

**Crude Nutrients**

<table>
<thead>
<tr>
<th></th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>91.9</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>16.5</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td><strong>31.6</strong></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.4</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.3</td>
</tr>
<tr>
<td>N free extracts</td>
<td>34.3</td>
</tr>
<tr>
<td>Starch</td>
<td>14.5</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>10.1</td>
</tr>
</tbody>
</table>

**Energy**

- **Gross Energy (GE)**: 23.2 [MJ/kg]
- **Metabolizable Energy (ME)**: 19.0 [MJ/kg] (1)
- **20.4 [MJ/kg]** (2)

![Energy Diagram](https://via.placeholder.com/150)

**Metabolizable Energy (ME)**

- 24% from Carbohydrates
- 19% from Protein
- 57% from Fat
- 28% from Carbohydrates
- 14% from Protein
- 58% from Fat

1) ME calculated according to the pig formula, Annex 4 of the German feed regulation
2) ME calculated with the Atwater factors

**Minerals**

<table>
<thead>
<tr>
<th></th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.95</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.70</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.24</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.17</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.92</td>
</tr>
</tbody>
</table>

**Fatty acids**

<table>
<thead>
<tr>
<th>Fatty acids</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td></td>
</tr>
<tr>
<td>C10:0</td>
<td></td>
</tr>
<tr>
<td>C12:0</td>
<td>0.02</td>
</tr>
<tr>
<td>C14:0</td>
<td>0.87</td>
</tr>
<tr>
<td>C16:0</td>
<td>8.50</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.64</td>
</tr>
<tr>
<td>C17:0</td>
<td>0.30</td>
</tr>
<tr>
<td>C18:0</td>
<td>4.67</td>
</tr>
<tr>
<td>C18:1</td>
<td>11.24</td>
</tr>
<tr>
<td>C18:2</td>
<td>1.86</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.23</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.05</td>
</tr>
<tr>
<td>C20:1</td>
<td>0.02</td>
</tr>
<tr>
<td>C20:4</td>
<td>0.06</td>
</tr>
<tr>
<td>C20:5</td>
<td></td>
</tr>
<tr>
<td>C22:6</td>
<td></td>
</tr>
</tbody>
</table>

**Amino acids**

<table>
<thead>
<tr>
<th>Amino acids</th>
<th>[%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.04</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.40</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.67</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.73</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Lys : Met+Cys 1 : 0.64
Lys : Thr 1 : 0.70
Lys : Trp 1 : 0.20
Arginine 0.98
Histidine 0.38
Valine 0.76
Isoleucine 0.68
Leucine 1.15
Phenylalanine 0.71
Phe+Tyr 1.24
Glycine 0.63
Glutamic acid 3.00
Aspartic acid 1.65
Proline 0.93
Alanine 0.65
Serine 0.76

**Vitamins**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>15,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>1,000 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>100 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>5 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>---- mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>16 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>22 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>18 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>100 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>86 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>38 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>6 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>440 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>2,630 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>100 mg</td>
</tr>
</tbody>
</table>

**Trace elements**

<table>
<thead>
<tr>
<th>Trace element</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>165 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>60 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>84 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>2.2 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.3 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>2.1 mg</td>
</tr>
</tbody>
</table>

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

**Main products**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E41166-30</td>
<td>Meal, single ground</td>
</tr>
<tr>
<td>E41166-33</td>
<td>4 mm pellets</td>
</tr>
</tbody>
</table>

**Feed composition**

*On request*
**ssniff® SM Mpig Control**

Experimental diet for minipigs, control feed

**Description**

This experimental diet bases mainly on conventional feedingstuffs (feed ingredients) of high quality. The diet can be used for adults and for young growing minipigs as well, because of its favourable composition, the well-balanced nutrient concentrations and the high nutrient availability. Moreover, the feed is ideally composed to serve as a control or reference diet to E41166-3.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>88.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>16.7</td>
</tr>
<tr>
<td>Crude fat</td>
<td>3.6</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>5.9</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.5</td>
</tr>
<tr>
<td>N free extracts</td>
<td>55.4</td>
</tr>
<tr>
<td>Starch</td>
<td>34.3</td>
</tr>
<tr>
<td>Sugar / Dextrines</td>
<td>7.0</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

- **Gross Energy (GE)** 16.3
- **Metabolizable Energy (ME)**
  - 1) 12.4
  - 2) 13.4

{1) ME calculated according to the pig formula, Annex 4 of the German feed regulation

{2) ME calculated with the Atwater factors

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>0.95</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.71</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.19</td>
</tr>
<tr>
<td>Potassium</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Fatty acid</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>—</td>
</tr>
<tr>
<td>C 10:0</td>
<td>—</td>
</tr>
<tr>
<td>C 12:0</td>
<td>—</td>
</tr>
<tr>
<td>C 14:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 16:0</td>
<td>0.43</td>
</tr>
<tr>
<td>C 16:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 17:0</td>
<td>—</td>
</tr>
<tr>
<td>C 18:0</td>
<td>0.09</td>
</tr>
<tr>
<td>C 18:1</td>
<td>0.79</td>
</tr>
<tr>
<td>C 18:2</td>
<td>1.88</td>
</tr>
<tr>
<td>C 18:3</td>
<td>0.17</td>
</tr>
<tr>
<td>C 20:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:1</td>
<td>0.01</td>
</tr>
<tr>
<td>C 20:4</td>
<td>—</td>
</tr>
<tr>
<td>C 20:5</td>
<td>—</td>
</tr>
<tr>
<td>C 22:6</td>
<td>—</td>
</tr>
</tbody>
</table>

Cholesterol [mg/kg] ———

(Orig./add.)

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino Acid</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.04</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.39</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>0.68</td>
</tr>
<tr>
<td>Threonine</td>
<td>0.71</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.25</td>
</tr>
<tr>
<td>Lys : Met+Cys</td>
<td>1 : 0.66</td>
</tr>
<tr>
<td>Lys : Thr</td>
<td>1 : 0.69</td>
</tr>
<tr>
<td>Lys : Trp</td>
<td>1 : 0.24</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.94</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.38</td>
</tr>
<tr>
<td>Valine</td>
<td>0.73</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>0.66</td>
</tr>
<tr>
<td>Leucine</td>
<td>1.23</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>0.70</td>
</tr>
<tr>
<td>Phe + Tyr</td>
<td>1.19</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.64</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>3.00</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.52</td>
</tr>
<tr>
<td>Proline</td>
<td>0.94</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.72</td>
</tr>
<tr>
<td>Serine</td>
<td>0.75</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

- Vitamin A 15,000 IU
- Vitamin D₃ 1,000 IU
- Vitamin E 105 mg
- Vitamin K (as menadione) 5 mg
- Vitamin C —— mg
- Thiamin (B₁) 17 mg
- Riboflavin (B₂) 22 mg
- Pyridoxine (B₆) 19 mg
- Cobalamin (B₁₂) 100 µg
- Nicotinic acid 93 mg
- Pantothenic acid 38 mg
- Folic acid 6 mg
- Biotin 450 µg
- Choline-Chloride 2,670 mg
- Inositol 100 mg

**Trace elements per kg**

- Iron 189 mg
- Manganese 65 mg
- Zinc 88 mg
- Copper 14 mg
- Iodine 2.2 mg
- Selenium 0.3 mg
- Cobalt 2.1 mg

**Main products**

- E41001-00 Meal, single ground
- E41001-03 4 mm pellets

**Feed composition**

On request

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax:  +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com
**ssniff® EF Pri Control**

Experimental diet for nonhuman primates (control feed)

**Description**
This experimental diet, which bases mainly on purified feed ingredients (purified diet), was designed for primates. The feed is ideally composed to serve as a control or reference in long-term studies, because of its well-balanced nutrient concentrations, the high nutrient availability and the constancy of nutrient supply. Moreover, the feed is supplemented with tasty dried fruits to increase the acceptance. Nevertheless, it is recommended to change gradually and with care from a conventional primate feed to this diet.

**Crude Nutrients [%]**

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>95.3</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>23.7</td>
</tr>
<tr>
<td>Crude fat</td>
<td>5.9</td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.8</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.7</td>
</tr>
<tr>
<td>N free extracts</td>
<td>54.9</td>
</tr>
<tr>
<td>Starch</td>
<td>35.9</td>
</tr>
<tr>
<td>Sugar</td>
<td>16.7</td>
</tr>
</tbody>
</table>

**Energy [MJ/kg]**

<table>
<thead>
<tr>
<th>Component</th>
<th>[MJ/kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Energy (GE)</td>
<td>18.4</td>
</tr>
<tr>
<td>Metabolizable Energy (ME)</td>
<td>15.4</td>
</tr>
</tbody>
</table>

**Minerals [%]**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1.15</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.76</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.99</td>
</tr>
</tbody>
</table>

**Fatty acids [%]**

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 8:0</td>
<td>---</td>
</tr>
<tr>
<td>C10:0</td>
<td>---</td>
</tr>
<tr>
<td>C12:0</td>
<td>0.01</td>
</tr>
<tr>
<td>C14:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C16:0</td>
<td>0.59</td>
</tr>
<tr>
<td>C16:1</td>
<td>0.03</td>
</tr>
<tr>
<td>C17:0</td>
<td>---</td>
</tr>
<tr>
<td>C18:0</td>
<td>0.26</td>
</tr>
<tr>
<td>C18:1</td>
<td>1.42</td>
</tr>
<tr>
<td>C18:2</td>
<td>2.75</td>
</tr>
<tr>
<td>C18:3</td>
<td>0.52</td>
</tr>
<tr>
<td>C20:0</td>
<td>0.03</td>
</tr>
<tr>
<td>C20:1</td>
<td>---</td>
</tr>
<tr>
<td>C20:5</td>
<td>---</td>
</tr>
<tr>
<td>C22:6</td>
<td>---</td>
</tr>
</tbody>
</table>

**Amino acids [%]**

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lysine</td>
<td>1.93</td>
</tr>
<tr>
<td>Methionine</td>
<td>0.93</td>
</tr>
<tr>
<td>Cystine</td>
<td>0.31</td>
</tr>
<tr>
<td>Met+Cys</td>
<td>1.23</td>
</tr>
<tr>
<td>Threonine</td>
<td>1.24</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>0.30</td>
</tr>
<tr>
<td>Lys : Met+Cys</td>
<td>1 : 0.64</td>
</tr>
<tr>
<td>Lys : Thr</td>
<td>1 : 0.64</td>
</tr>
<tr>
<td>Lys : Trp</td>
<td>1 : 0.16</td>
</tr>
<tr>
<td>Arginine</td>
<td>0.86</td>
</tr>
<tr>
<td>Histidine</td>
<td>0.74</td>
</tr>
<tr>
<td>Valine</td>
<td>1.60</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>1.22</td>
</tr>
<tr>
<td>Leucine</td>
<td>2.30</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>1.25</td>
</tr>
<tr>
<td>Phe+Tyr</td>
<td>2.50</td>
</tr>
<tr>
<td>Glycine</td>
<td>0.49</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>5.28</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>1.75</td>
</tr>
<tr>
<td>Proline</td>
<td>2.70</td>
</tr>
<tr>
<td>Alanine</td>
<td>0.77</td>
</tr>
<tr>
<td>Serine</td>
<td>1.40</td>
</tr>
</tbody>
</table>

**Vitamins per kg**

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>18,000 IU</td>
</tr>
<tr>
<td>Vitamin D₃</td>
<td>3,800 IU</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>180 mg</td>
</tr>
<tr>
<td>Vitamin K (as menadione)</td>
<td>24 mg</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>2,000 mg</td>
</tr>
<tr>
<td>Thiamin (B₁)</td>
<td>19 mg</td>
</tr>
<tr>
<td>Riboflavin (B₂)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Pyridoxine (B₆)</td>
<td>20 mg</td>
</tr>
<tr>
<td>Cobalamin (B₁₂)</td>
<td>36 µg</td>
</tr>
<tr>
<td>Nicotinic acid</td>
<td>60 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>67 mg</td>
</tr>
<tr>
<td>Folic acid</td>
<td>24 mg</td>
</tr>
<tr>
<td>Biotin</td>
<td>370 µg</td>
</tr>
<tr>
<td>Choline-Chloride</td>
<td>1,250 mg</td>
</tr>
<tr>
<td>Inositol</td>
<td>95 mg</td>
</tr>
</tbody>
</table>

**Trace elements per kg**

<table>
<thead>
<tr>
<th>Element</th>
<th>per kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>166 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>98 mg</td>
</tr>
<tr>
<td>Zinc</td>
<td>66 mg</td>
</tr>
<tr>
<td>Copper</td>
<td>14 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>1.16 mg</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.15 mg</td>
</tr>
<tr>
<td>Cobalt</td>
<td>0.15 mg</td>
</tr>
</tbody>
</table>

**Feed composition**

*On request*

**Main products**

- E39000-00 Meal, single ground
- E39000-03 4 mm pellets
- E39000-04 10 mm pellets

**Production and sale**

ssniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
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E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

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1) ME calculated with the Atwater factors
snniff® EF Pri Energy reduced Control
Experimental diet for nonhuman primates, high fibre (control feed)

Description
This experimental diet, which bases mainly on purified feed ingredients (purified diet), was designed for primates. The feed is ideally composed to serve as a control or reference in long-term studies, because of its well-balanced nutrient concentrations, the high nutrient availability and the constancy of nutrient supply. In addition to tasty dried fruits, the feed was also supplemented with fermentable fibre (e.g. oligosaccharides) to reduce the energy density and to stabilize the gut health. Nevertheless, it is recommended to change gradually and with care from a conventional primate feed to this diet.

Crude Nutrients [%]
- Dry matter: 95.4
- Crude protein (N x 6.25): 23.7
- Crude fat: 5.3
- Crude fibre: 10.3
- Crude ash: 6.7
- N free extracts: 49.0
- Starch: 31.7
- Sugar: 14.9

Energy [MJ/kg]
- Gross Energy (GE): 18.4
- Metabolizable Energy (ME): 14.2

Minerals [%]
- Calcium: 1.15
- Phosphorus: 0.76
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.99

Fatty acids [%]
- C8:0: –
- C10:0: 0.01
- C12:0: 0.03
- C14:0: 0.55
- C16:1: 0.33
- C17:0: –
- C18:0: 0.24
- C18:1: 1.32
- C18:2: 2.57
- C18:3: 0.42
- C20:0: 0.02
- C20:1: –
- C20:5: –
- C22:6: –

Amino acids [%]
- Lysine: 1.93
- Methionine: 0.93
- Cystine: 0.31
- Met+Cys: 1.23
- Threonine: 1.24
- Tryptophan: 0.30
- Lys : Met+Cys: 1:0.64
- Lys : Thr: 1:0.64
- Lys : Trp: 1:0.16
- Arginine: 0.86
- Histidine: 0.74
- Valine: 1.60
- Isoleucine: 1.22
- Leucine: 2.30
- Phenylalanine: 1.25
- Phe+Tyr: 2.50
- Glycine: 0.49
- Glutamic acid: 5.28
- Aspartic acid: 1.75
- Proline: 2.70
- Alanine: 0.77
- Serine: 1.40

Vitamins per kg
- Vitamin A: 18,000 IU
- Vitamin D$_3$: 3,800 IU
- Vitamin E: 180 mg
- Vitamin K (as menadione): 24 mg
- Vitamin C: 2,000 mg
- Thiamin (B$_1$): 19 mg
- Riboflavin (B$_2$): 20 mg
- Pyridoxine (B$_6$): 20 mg
- Cobalamin (B$_{12}$): 36 µg
- Nicotinic acid: 60 mg
- Pantothenic acid: 67 mg
- Folic acid: 24 mg
- Biotin: 370 µg
- Choline-Chloride: 1,250 mg
- Inositol: 95 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 66 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.15 mg
- Cobalt: 0.15 mg

Main products
- E39800-00 Meal, single ground
- E39800-03 4 mm pellets
- E39800-04 10 mm pellets

Production and sale
snniff Spezialdiäten GmbH
Phone: +49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail: mail@snniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated with the Atwater factors
ssniff® EF Pri high Fat, with 13 % fat
Experimental diet for nonhuman primates, high fat, saturated fatty acids

Description
This experimental diet, which consists mainly of purified feed ingredients, was designed for primates. Based on the control feed the fat concentration was markedly increased in that diet. Because of the high fat content with mainly saturated, long-chain fatty acids the feed may promote the incidence of metabolic disorders (Metabolic Syndrome, diabetes type 2, atherosclerotic defects). The time taken until first symptoms can be observed varies and may depend on several factors (e.g. age, nutritional status, pre-feeding). The change from a conventional primate feed to that diet should be handled with special care, i.e. blending the diet with the previous feed over at least 10 - 14 days, to avoid gastro-intestinal disturbances caused by the fat.

Crude Nutrients [%]
- Dry matter: 95.8
- Crude protein (N x 6.25): 23.5
- Crude fat: 13.2
- Crude fibre: 3.5
- Crude ash: 6.7
- N free extracts: 48.6
- Starch: 23.9
- Sugar: 22.0

Energy [MJ/kg]
- Gross Energy (GE): 20.1
- Metabolizable Energy (ME): 17.0

Crude Nutrients [mg/kg]
- Crude fat calculated with the Atwater factors

Minerals [%]
- Calcium: 1.15
- Phosphorus: 0.76
- Sodium: 0.19
- Magnesium: 0.21
- Potassium: 0.99

Fatty acids [%]
- C 4:0
- C 6:0
- C 8:0: 0.18
- C 10:0: 0.14
- C 12:0: 1.06
- C 14:0: 0.65
- C 16:0: 3.23
- C 16:1: 0.17
- C 17:0: 0.07
- C 18:0: 1.34
- C 18:1: 3.91
- C 18:2: 1.16
- C 18:3: 0.12
- C 20:0: 0.03
- C 20:1: 0.09
- C 20:4: 0.01

Cholesterol (original) [mg/kg]: 57

Amino acids [%]
- Lysine: 1.93
- Methionine: 0.93
- Cystine: 0.31
- Met+Cys: 1.23
- Threonine: 1.24
- Tryptophan: 0.30
- Lys : Met+Cys: 1 : 0.64
- Lys : Thr: 1 : 0.64
- Lys : Trp: 1 : 0.16
- Arginine: 0.86
- Histidine: 0.74
- Valine: 1.60
- Isoleucine: 1.22
- Leucine: 2.30
- Phenylalanine: 1.25
- Phe+Tyr: 2.50
- Glycine: 0.49
- Glutamic acid: 5.28
- Aspartic acid: 1.75
- Proline: 2.70
- Alanine: 0.77
- Serine: 1.40

Vitamins per kg
- Vitamin A: 18,000 IU
- Vitamin D₃: 3,800 IU
- Vitamin E: 180 mg
- Vitamin K (as menadione): 24 mg
- Vitamin C: 2,000 mg
- Thiamin (B₁): 19 mg
- Riboflavin (B₂): 20 mg
- Pyridoxine (B₆): 20 mg
- Cobalamin (B₁₂): 36 µg
- Nicotinic acid: 60 mg
- Pantothenic acid: 67 mg
- Folic acid: 24 mg
- Biotin: 370 µg
- Choline-Chloride: 1,250 mg
- Inositol: 95 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 66 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.15 mg
- Cobalt: 0.15 mg

Main products
- E39122-30 Meal, single ground
- E39122-33 4 mm pellets
- E39122-34 10 mm pellets

Production and sale
ssniff Spezialdiäten GmbH
Phone:+49-(0)2921-9658-0
Fax: +49-(0)2921-9658-40
E-Mail mail@ssniff.de
www.ssniff.de / www.ssniff.com

1) ME calculated with the Atwater factors
**ssniff® EF Pri high Fat, with 15 % fat**

Experimental diet for nonhuman primates, high fat, saturated fatty acids

**Description**

This experimental diet represents the second fat level within the three high fat diets. It can be assumed that metabolic disorders (Metabolic Syndrome, diabetes type 2, atherosclerotic lesions) may occur earlier and more pronounced, because of the higher fat content. However, the time taken until the appearance of first symptoms may depend also on several factors (e.g. age, nutritional status, pre-feeding). Provided that the diet with 13 % crude fat was pre-fed without any disturbance the change to this diet can be made quickly. The change from a standard primate chow on the other hand should be carried out gradually over at least 10 - 21 days.

**Crude Nutrients**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>96.0</td>
</tr>
<tr>
<td>Crude protein (N x 6.25)</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>Crude fat</strong></td>
<td><strong>15.1</strong></td>
</tr>
<tr>
<td>Crude fibre</td>
<td>3.5</td>
</tr>
<tr>
<td>Crude ash</td>
<td>6.7</td>
</tr>
<tr>
<td>N free extracts</td>
<td>46.9</td>
</tr>
<tr>
<td>Starch</td>
<td>21.0</td>
</tr>
<tr>
<td><strong>Sugar</strong></td>
<td><strong>23.4</strong></td>
</tr>
</tbody>
</table>

**Energy**

- **Gross Energy (GE)**: 20.5 [MJ/kg]
- **Metabolizable Energy (ME)**: 17.5 [MJ/kg]

**Minerals**

<table>
<thead>
<tr>
<th>Mineral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>1.15</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.76</td>
</tr>
<tr>
<td>Sodium</td>
<td>0.19</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.21</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.99</td>
</tr>
</tbody>
</table>

**Fatty acids**

- C 4:0: 0.12
- C 6:0: 0.09
- C 8:0: 0.12
- C 10:0: 0.71
- C 12:0: 0.56
- C 14:0: 4.12
- C 16:1: 0.21
- C 17:0: 0.09
- C 18:0: 1.58
- C 18:1: 4.86
- C 18:2: 1.34
- C 18:3: 0.14
- C 20:0: 0.04
- C 20:1: —
- C 20:4: 0.02

**Cholesterol**

- (original) [mg/kg]: 66

**Amino acids**

- Lysine: 1.93%
- Methionine: 0.93%
- Cysteine: 0.31%
- Met+Cys: 1.23%
- Threonine: 1.24%
- Tryptophan: 0.30%
- Lys : Met+Cys: 1 : 0.64
- Lys : Thr: 1 : 0.64
- Lys : Trp: 1 : 0.16
- Arginine: 0.86%
- Histidine: 0.74%
- Valine: 1.60%
- Isoleucine: 1.22%
- Leucine: 2.30%
- Phenylalanine: 1.25%
- Phe+Tyr: 2.50%
- Glycine: 0.49%
- Glutamic acid: 5.28%
- Aspartic acid: 1.75%
- Proline: 2.70%
- Alanine: 0.77%
- Serine: 1.40%

**Vitamins**

- Vitamin A: 18,000 IU
- Vitamin D₃: 3,800 IU
- Vitamin E: 180 mg
- Vitamin K (as menadione): 24 mg
- Vitamin C: 2,000 mg
- Thiamin (B₁): 19 mg
- Riboflavin (B₂): 20 mg
- Pyridoxine (B₆): 20 mg
- Cobalamin (B₁₂): 36 µg
- Nicotinic acid: 60 mg
- Pantothenic acid: 67 mg
- Folic acid: 24 mg
- Biotin: 370 µg
- Choline-Chloride: 1,250 mg
- Inositol: 95 mg

**Trace elements**

- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 66 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.15 mg
- Cobalt: 0.15 mg

**Main products**

- E39123-30 Meal, single ground
- E39123-33 4 mm pellets
- E39123-34 10 mm pellets

**Production and sale**

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www.ssniff.de / www.ssniff.com

*(ME calculated with the Atwater factors)*
snniff® EF Pri high Fat, with 17 % fat
Experimental diet for nonhuman primates, high fat, saturated fatty acids

Description
The fat content of this experimental diet, which represents the third fat level among the three high fat diets, was further increased. It can be assumed that disorders of the intermediary metabolism (Metabolic Syndrome, diabetes type 2, atherosclerotic defects) may occur earlier and more pronounced, because of the very high fat content. However, the time taken until the appearance of first symptoms may depend also with that diet on several endogenous and exogenous factors (e.g. age, nutritional status, pre-feeding). It is recommended to allow the animal to adapt to that diet over a longer time period (app 4 - 6 weeks) to avoid gastro-intestinal disturbances caused by the fat; alternatively the primates can be pre-fed with the other two high fat diets.

Crude Nutrients [%]
- Dry matter: 96.2%
- Crude protein (N x 6.25): 23.5%
- **Crude fat**: 17.1%
- Crude fibre: 3.5%
- Crude ash: 6.7%
- N free extracts: 45.1%
- Starch: 17.5%
- **Sugar**: 24.8%

Energy [MJ/kg]
- **Gross Energy (GE)**: 21.0
- **Metabolizable Energy (ME)**: 17.9

Minerals [%]
- Calcium: 1.15%
- Phosphorus: 0.76%
- Sodium: 0.19%
- Magnesium: 0.21%
- Potassium: 0.99%

Fatty acids [%]
- C 4:0: —
- C 6:0: —
- C 8:0: 0.24%
- C10:0: 0.18%
- C12:0: 1.41%
- C14:0: 0.86%
- C16:0: 4.28%
- C16:1: 0.23%
- C17:0: 0.10%
- C18:0: 1.77%
- C18:1: 5.12%
- C18:2: 1.29%
- C18:3: 0.13%
- C20:0: 0.04%
- C20:1: —
- C20:4: 0.02%

Amino acids [%]
- Lysine: 1.93%
- Methionine: 0.93%
- Cystine: 0.31%
- Met+Cys: 1.23%
- Threonine: 1.24%
- Tryptophan: 0.30%
- Lys : Met+Cys: 1 : 0.64
- Lys : Thr: 1 : 0.64
- Lys : Trp: 1 : 0.16
- Arginine: 0.86%
- Histidine: 0.74%
- Valine: 1.60%
- Isoleucine: 1.22%
- Leucine: 2.30%
- Phenylalanine: 1.25%
- Phe+Tyr: 2.50%
- Glycine: 0.49%
- Glutamic acid: 5.28%
- Aspartic acid: 1.75%
- Proline: 2.70%
- Alanine: 0.77%
- Serine: 1.40%

Vitamins per kg
- Vitamin A: 18,000 IU
- Vitamin D₃: 3,800 IU
- Vitamin E: 180 mg
- Vitamin K (as menadione): 24 mg
- Vitamin C: 2,000 mg
- Thiamin (B₁): 19 mg
- Riboflavin (B₂): 20 mg
- Pyridoxine (B₆): 20 mg
- Cobalamin (B₁₂): 36 µg
- Nicotinic acid: 60 mg
- Pantothenic acid: 67 mg
- Folic acid: 24 mg
- Biotin: 370 µg
- Choline Chloride: 1,250 mg
- Inositol: 95 mg

Trace elements per kg
- Iron: 166 mg
- Manganese: 98 mg
- Zinc: 66 mg
- Copper: 14 mg
- Iodine: 1.16 mg
- Selenium: 0.15 mg
- Cobalt: 0.15 mg

Production and sale
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Fax: +49-(0)2921-9658-40
E-Mail: mail@snniff.de
www.ssniff.de / www.ssniff.com

Main products
E39124-30 Meal, single ground
E39124-33 4 mm pellets
E39124-34 10 mm pellets

Footnote: ME calculated with the Atwater factors

On request
**ssniff® SM Pri Standard with 15 % fat**

Experimental diet for nonhuman primates, high fat, mainly saturated fatty acids

**Description**
This experimental diet was designed for primates. The feed is particularly tasty because it contains not only purified feed ingredients, but also primate typical feedingstuffs. As the result of the high fat content with mainly saturated long-chain fatty acids and the addition of crystalline cholesterol, the feed may promote the incidence of metabolic disorders (e.g. Metabolic Syndrome, diabetes type 2), particularly of atherosclerotic lesions (plaques). The change from a standard primate chow to that diet should be carried out gradually over at least 14 days.

### Crude Nutrients [%]
- **Dry matter**: 91.0
- **Crude protein (N x 6.25)**: 23.1
- **Crude fat**: 14.8
- **Crude fibre**: 3.4
- **Crude ash**: 7.2
- **N free extracts**: 42.4
- **Starch**: 20.3
- **Sugar**: 13.8

### Energy [MJ/kg]
- **Gross Energy (GE)**: 19.5
- **Metabolizable Energy (ME)**: 16.6

### Minerals [%]
- **Calcium**: 1.16
- **Phosphorus**: 0.80
- **Sodium**: 0.19
- **Magnesium**: 0.18
- **Potassium**: 0.93

### Fatty acids [%]
- **C 4:0**: 0.43
- **C 6:0**: 0.32
- **C 8:0**: 2.52
- **C 10:0**: 1.07
- **C 12:0**: 0.98
- **C 14:0**: 0.84
- **C 16:0**: 0.09
- **C 17:0**: 0.04
- **C 18:1**: 1.45
- **C 18:2**: 2.75
- **C 18:3**: 1.69
- **C 20:0**: 0.18
- **C 20:1**: 0.03
- **C 20:4**: 0.01

### Cholesterol (orig./add.) [mg/kg]
- **12,560**

### Amino acids [%]
- **Lysine**: 1.47
- **Methionine**: 0.64
- **Cystine**: 0.33
- **Met+Cys**: 0.97
- **Threonine**: 0.89
- **Tryptophan**: 0.29
- **Lys : Met+Cys**: 1 : 0.66
- **Lys : Thr**: 1 : 0.61
- **Lys : Trp**: 1 : 0.20
- **Arginine**: 1.31
- **Histidine**: 0.58
- **Valine**: 1.17
- **Isoleucine**: 1.03
- **Leucine**: 1.93
- **Phenylalanine**: 1.09
- **Phe+Tyr**: 1.95
- **Glycine**: 0.84
- **Glutamic acid**: 4.39
- **Aspartic acid**: 2.19
- **Proline**: 1.63
- **Alanine**: 0.97
- **Serine**: 1.16

### Vitamins per kg
- **Vitamin A**: 17,300 IU
- **Vitamin D₃**: 2,700 IU
- **Vitamin E**: 125 mg
- **Vitamin K (as menadione)**: 9 mg
- **Vitamin C**: 1,800 mg
- **Thiamin (B₁)**: 33 mg
- **Riboflavin (B₂)**: 25 mg
- **Pyridoxine (B₆)**: 23 mg
- **Cobalamin (B₁₂)**: 112 µg
- **Nicotinic acid**: 120 mg
- **Pantothenic acid**: 45 mg
- **Folic acid**: 7 mg
- **Biotin**: 530 µg
- **Choline-Chloride**: 2,750 mg
- **Inositol**: 100 mg

### Trace elements per kg
- **Iron**: 170 mg
- **Manganese**: 49 mg
- **Zinc**: 78 mg
- **Copper**: 15 mg
- **Iodine**: 2.2 mg
- **Selenium**: 0.3 mg
- **Cobalt**: 2.1 mg

### Main products
- E39113-30 Meal, single ground
- E39113-33 4 mm pellets
- E39113-34 10 mm pellets

**Production and sale**
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1) ME calculated with the Atwater factors
snniff® EF Chicks Control
Experimental diet for broiler chicks (control feed)

**Description**
This experimental diet bases mainly on highly digestible, purified feed ingredients (purified diet). It is therefore ideally composed for studies, in which an exact adjustment of the crude nutrient concentrations is required. The diet was designed for broiler chicks from the first day of life until end of the fattening period (app day 32). However, with small modifications it can be also used for other poultry species and categories.

**Crude Nutrients [%]**
- Dry matter: 95.8
- Crude protein (N x 6.25): 23.5
- Crude fat: 8.2
- Crude fibre: 3.1
- Crude ash: 7.3
- N free extracts: 53.8
- Starch: 50.9
- Sugar: 1.2

**Energy [MJ/kg]**
- Gross Energy (GE): 18.9
- Metabolizable Energy (ME):
  - 15.1 \(^1\)
  - 16.0 \(^2\)

**Minerals [%]**
- Calcium: 1.25
- Phosphorus: 0.85
- Sodium: 0.28
- Magnesium: 0.22
- Potassium: 1.01

**Fatty acids [%]**
- C 8:0: —
- C10:0: —
- C12:0: —
- C14:0: 0.02
- C16:0: 0.84
- C16:1: 0.05
- C17:0: —
- C18:0: 0.36
- C18:1: 2.09
- C18:2: 4.24
- C18:3: 0.52
- C20:0: 0.04
- C20:1: —
- C20:5: —
- C22:6: —

**Amino acids [%]**
- Lysine: 1.61
- Methionine: 0.70
- Cystine: 0.46
- Met+Cys: 1.16
- Threonine: 1.02
- Tryptophan: 0.30
- Arginine: 1.52
- Histidine: 0.66
- Valine: 1.27
- Isoleucine: 1.14
- Leucine: 1.95
- Phenylalanine: 1.20
- Phe+Tyr: 2.12
- Glycine: 0.78
- Glutamic acid: 3.25
- Aspartic acid: 1.96
- Proline: 1.64
- Alanine: 0.81
- Serine: 1.30

**Vitamins per kg**
- Vitamin A: 15,000 IU
- Vitamin D₃: 2,500 IU
- Vitamin E: 150 mg
- Vitamin K (as menadione): 20 mg
- Vitamin C: 30 mg
- Thiamin (B₁): 16 mg
- Riboflavin (B₂): 16 mg
- Pyridoxine (B₆): 16 mg
- Cobalamin (B₁₂): 30 µg
- Nicotinic acid: 51 mg
- Pantothenic acid: 54 mg
- Folic acid: 20 mg
- Biotin: 350 µg
- Choline-Chloride: 1,010 mg
- Inositol: 80 mg

**Trace elements per kg**
- Iron: 193 mg
- Manganese: 98 mg
- Zinc: 135 mg
- Copper: 15 mg
- Iodine: 1.25 mg
- Selenium: 0.15 mg
- Cobalt: 0.16 mg

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1) ME calculated according to the formula given by the World Poultry Science Association (WPSA)
2) ME calculated with the Atwater factors

**Main products**
- E68000-00 Meal, single ground
- E68000-02 2 mm pellets

**Production and sale**
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