**Supplementary Table 1: IAAO semi-purified diet formulations (ssniff Spezialdiaten GmbH, Germany)**

|  |  |  |
| --- | --- | --- |
|  | **Units** | **Diets** |
|  | **0** | **0.3** | **0.6** | **0.9** | **1.2** | **1.5** | **1.8** | **2.1** | **2.4** |
| **Formulation** |
| **Corn Starch** | **%** | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 | 11.00 |
| **Maltodextrin** | **%** | 28.24 | 28.20 | 28.15 | 28.09 | 28.04 | 28.00 | 27.94 | 27.89 | 27.85 |
| **Sucrose** | **%** | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 |
| **Celullose powder** | **%** | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| **L-Lysine** | **%** | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 | 1.90 |
| **DL-Methionine** | **%** | 0.00 | 0.12 | 0.24 | 0.36 | 0.48 | 0.60 | 0.72 | 0.84 | 0.96 |
| **L-Cystine** | **%** | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 |
| **L-Threonine** | **%** | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **L-Tryptophan** | **%** | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| **L-Arginine** | **%** | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 |
| **L-Histidine** | **%** | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| **L-Valine** | **%** | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| **L-Isoleucine** | **%** | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| **L-Leucine** | **%** | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 | 1.65 |
| **L-Phenylalanine** | **%** | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| **L-Tyrosine** | **%** | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 |
| **L-Glycine** | **%** | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 |
| **L-Glutamic acid** | **%** | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 |
| **L-Glutamine** | **%** | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 | 2.40 |
| **L-Aspartic acid** | **%** | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| **L-Asparagine** | **%** | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| **L-Proline** | **%** | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 |
| **L-Alanine** | **%** | 2.66 | 2.58 | 2.51 | 2.45 | 2.38 | 2.30 | 2.24 | 2.17 | 2.09 |
| **L-Serine** | **%** | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| **Taurine** | **%** | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| **Vitamin premixture** | **%** | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **Minerals & trace element premix** | **%** | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| **Sodium bicarbonate** | **%** | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| **Monocalciumphosphate** | **%** | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 | 1.10 |
| **Calcium carbonate** | **%** | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| **Choline CI** | **%** | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| **Flavour** | **%** | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| **Digest Cat** | **%** | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| **Pork lard** | **%** | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| **Poultry fat** | **%** | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| **Soybean oil** | **%** | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |

**Supplementary Table 2: Analytical analysis of the nutritional profile of IAAO study diets**

|  |  |  |
| --- | --- | --- |
|  | **Units** | **Diets** |
|  | **0** | **0.3** | **0.6** | **0.9** | **1.2** | **1.5** | **1.8** | **2.1** | **2.4** |
| **Nutrition Values** |
| **Starch** | **%** | 9.2 | 7.7 | 8.6 | 7.0 | 8.0 | 7.9 | 8.7 | 8.2 | 7.6 |
| **Moisture** | **%** | 3.7 | 3.5 | 4 | 4.1 | 3.5 | 3.7 | 3.6 | 3.5 | 3.9 |
| **Protein** | **%** | 25.5 | 25.9 | 25.8 | 25.9 | 26.1 | 26.0 | 26.4 | 25.8 | 26.2 |
| **Fat** | **%** | 11.6 | 11.7 | 11.9 | 11.1 | 11.6 | 11.9 | 11.1 | 11.4 | 11.7 |
| **Ash** | **%** | 7.6 | 7.4 | 7.1 | 7.7 | 7.3 | 7.1 | 7.3 | 7.6 | 7.5 |
| **Nitrogen Free Extract** | **%** | 49.2 | 49.2 | 48.9 | 49.1 | 49.2 | 48.6 | 49.5 | 50.0 | 48.7 |
| **Predicted Metabolisable Energy** | **Kcal** | 381.8 | 384.6 | 384.7 | 379.8 | 384.6 | 383.1 | 383.4 | 386.6 | 384.9 |
| **Crude Fibre** | **%** | 2.4 | 2.3 | 2.3 | 2.1 | 2.3 | 2.7 | 2.1 | 1.7 | 2.0 |
| **Essential Fatty Acids** |
| **Linoleic acid** | **%** | 2.44 | 2.52 | 2.4 | 2.37 | 2.41 | 2.61 | 2.42 | 2.56 | 2.45 |
| **Alpha Linolenic acid** | **%** | 0.29 | 0.31 | 0.29 | 0.28 | 0.29 | 0.32 | 0.291 | 0.311 | 0.298 |
| **Aracidonic acid** | **%** | 0.02 | 0.02 | 0.014 | 0.014 | 0.014 | 0.02 | 0.014 | 0.014 | 0.014 |
| **Minerals** |
| **Calcium** | **%** | 1.25 | 1.22 | 1.22 | 1.25 | 1.20 | 1.21 | 1.19 | 1.24 | 1.22 |
| **Phosphorus** | **%** | 0.92 | 0.95 | 0.89 | 0.9 | 0.83 | 0.84 | 0.84 | 0.91 | 0.86 |
| **Sodium** | **%** | 0.42 | 0.41 | 0.42 | 0.42 | 0.40 | 0.38 | 0.42 | 0.45 | 0.39 |
| **Potassium** | **%** | 0.97 | 0.95 | 0.96 | 0.99 | 0.94 | 0.94 | 0.97 | 1.08 | 0.94 |
| **Magnesium** | **%** | 0.15 | 0.14 | 0.14 | 0.14 | 0.14 | 0.15 | 0.14 | 0.15 | 0.14 |
| **Iron** | **mg/kg** | 204 | 200 | 197 | 215 | 195 | 213 | 202 | 208 | 191 |
| **Copper** | **mg/kg** | 15.3 | 16.4 | 16.7 | 15.2 | 14.8 | 13.7 | 15.6 | 15.1 | 14.5 |
| **Manganese** | **mg/kg** | 80 | 78 | 71.2 | 92.6 | 98.3 | 85.7 | 85 | 97.9 | 76.3 |
| **Zinc** | **mg/kg** | 138 | 139 | 137 | 138 | 140 | 140 | 134 | 141 | 137 |
| **Iodine** | **mg/kg** | 1.1 | 1.8 | 4.1 | 2.8 | 2.6 | 1.9 | 1.3 | 2.8 | 1.2 |
| **Selenium** | **mg/kg** | 0.58 | 0.58 | 0.64 | 0.80 | 0.70 | 0.69 | 0.59 | 0.71 | 0.65 |
| **Chloride** | **%** | 0.78 | 0.71 | 0.73 | 0.86 | 0.76 | 0.87 | 0.7 | 0.88 | 0.72 |
| **Vitamins** |
| **Vitamin A** | **IU/kg** | 11100 | 12100 | 10000 | 12200 | 11300 | 11300 | 13600 | 12400 | 16400 |
| **Vitamin E** | **mg/kg** | 132 | 135 | 140 | 164 | 145 | 142 | 151 | 174 | 182 |
| **Thiamin** | **mg/kg** | 19 | 18.6 | 18.5 | 21.3 | 20.8 | 21.8 | 26.8 | 25.4 | 33.1 |
| **Riboflavin** | **mg/kg** | 15.8 | 14 | 12.6 | 15.9 | 17.1 | 14.4 | 17.7 | 17.6 | 22 |
| **Niacin/ Nicotinic acid** | **mg/kg** | 63.6 | 91.5 | 55.9 | 67.4 | 94.7 | 63.7 | 96.5 | 75.3 | 105 |
| **Pyridoxine** | **mg/kg** | 16.2 | 16 | 16.2 | 18.8 | 17.5 | 17.4 | 22.6 | 22.2 | 18.8 |
| **Pantothenic acid** | **µg/g** | 31.4 | 30.9 | 30.9 | 33.6 | 35.4 | 30 | 38 | 37.3 | 42.9 |
| **Folic acid** | **mg/kg** | 6 | 5.9 | 6.6 | 7.2 | 9.95 | 7.2 | 7.9 | 7.4 | 7.9 |
| **Cyanocobalamin (Vit B12)** | **mg/kg** | 0.056 | 0.060 | 0.062 | 0.071 | 0.073 | 0.071 | 0.086 | 0.064 | 0.079 |
| **Choline** | **mg/kg** | 3470 | 3430 | 3450 | 3380 | 3440 | 3420 | 3360 | 3390 | 3540 |
| **Vitamin K3** | **mg/kg** | 6 | 5.9 | 5.4 | 7.2 | 8.0 | 6 | 8 | 7.4 | 11.5 |
| **Biotin** | **mg/kg** | 0.336 | 0.369 | 0.301 | 0.334 | 0.332 | 0.328 | 0.345 | 0.379 | 0.413 |
| **Vitamin D3** | **IU/kg** | 1370 | 1330 | 1310 | 1120 | 1020 | 1090 | 1310 | 1340 | 1220 |
| **Essential Amino Acids** |
| **Arginine** | **%** | 1.32 | 1.36 | 1.34 | 1.40 | 1.30 | 1.48 | 1.34 | 1.28 | 1.37 |
| **Histidine** | **%** | 0.94 | 0.90 | 0.97 | 0.98 | 0.98 | 0.94 | 0.94 | 1.00 | 0.97 |
| **Isoleucine** | **%** | 0.92 | 0.93 | 0.89 | 0.89 | 0.88 | 0.93 | 0.88 | 0.83 | 0.90 |
| **Leucine** | **%** | 1.73 | 2.69 | 1.62 | 1.62 | 1.67 | 1.67 | 2.48 | 1.61 | 1.64 |
| **Lysine** | **%** | 1.53 | 1.57 | 1.49 | 1.58 | 1.45 | 1.63 | 1.49 | 1.41 | 1.56 |
| **Methionine** | **%** | 0.00 | 0.12 | 0.23 | 0.37 | 0.50 | 0.62 | 0.70 | 0.83 | 0.95 |
| **Cystine** | **%** | 1.310 | 1.390 | 1.330 | 1.360 | 1.350 | 1.310 | 1.310 | 1.370 | 1.340 |
| **Phenylalanine** | **%** | 0.94 | 0.95 | 0.89 | 0.94 | 0.87 | 0.99 | 0.91 | 0.86 | 0.97 |
| **Tyrosine** | **%** | 1.08 | 1.09 | 1.06 | 1.07 | 1.10 | 1.04 | 1.06 | 1.12 | 1.08 |
| **Threonine** | **%** | 0.89 | 0.94 | 0.81 | 0.92 | 0.93 | 0.83 | 0.92 | 1.00 | 0.94 |
| **Tryptophan** | **%** | 0.31 | 0.33 | 0.32 | 0.32 | 0.33 | 0.33 | 0.32 | 0.31 | 0.31 |
| **Valine** | **%** | 1.31 | 1.33 | 1.26 | 1.29 | 1.28 | 1.29 | 1.24 | 1.22 | 1.26 |

**Supplementary Table 3: Proximate composition (per 100g) of Royal Canin medium dog dry diet**

|  |  |  |
| --- | --- | --- |
|  | **Units** | **Proximates** |
| **Starch** | **g** | 0 |
| **Moisture** | **g** | 9.00 |
| **Protein** | **g** | 25.10 |
| **Fat**  | **g** | 14.80 |
| **Ash** | **g** | 5.50 |
| **Crude Fibre** | **%** | 0.00 |
| **Nitrogen Free Extract** | **g** | 45.60 |
| **Predicted Metaboliseable Energy** | **Kcal** | 401.80 |

**Supplementary Table 4: Longlitudinal study diet formulations (ssniff Spezialdiaten GmbH, Germany)**

|  |  |  |
| --- | --- | --- |
|  | **Units** | **Diets** |
| **0.55** | **0.71** | **1.37** |
| **Formulation** |
| **Corn Starch** | **%** | 11.00 | 11.00 | 11.00 |
| **Maltodextrin** | **%** | 28.59 | 28.58 | 28.54 |
| **Sucrose** | **%** | 8.00 | 8.00 | 8.00 |
| **Celullose powder** | **%** | 3.00 | 3.00 | 3.00 |
| **L-Lysine** | **%** | 1.90 | 1.90 | 1.90 |
| **DL-Methionine** | **%** | 0.22 | 0.28 | 0.55 |
| **L-Cystine** | **%** | 0.85 | 0.79 | 0.52 |
| **L-Threonine** | **%** | 1.00 | 1.00 | 1.00 |
| **L-Tryptophan** | **%** | 0.35 | 0.35 | 0.35 |
| **L-Arginine** | **%** | 1.35 | 1.35 | 1.35 |
| **L-Histidine** | **%** | 0.75 | 0.75 | 0.75 |
| **L-Valine** | **%** | 1.25 | 1.25 | 1.25 |
| **L-Isoleucine** | **%** | 0.90 | 0.90 | 0.90 |
| **L-Leucine** | **%** | 1.65 | 1.65 | 1.65 |
| **L-Phenylalanine** | **%** | 0.94 | 0.94 | 0.94 |
| **L-Tyrosine** | **%** | 1.18 | 1.18 | 1.18 |
| **L-Glycine** | **%** | 2.80 | 2.80 | 2.80 |
| **L-Glutamic acid** | **%** | 2.20 | 2.20 | 2.20 |
| **L-Glutamine** | **%** | 2.40 | 2.40 | 2.40 |
| **L-Aspartic acid** | **%** | 0.80 | 0.80 | 0.80 |
| **L-Asparagine** | **%** | 1.70 | 1.70 | 1.70 |
| **L-Proline** | **%** | 1.35 | 1.35 | 1.35 |
| **L-Alanine** | **%** | 2.95 | 2.96 | 3.0 |
| **L-Serine** | **%** | 0.95 | 0.95 | 0.95 |
| **Taurine** | **%** | 0.00 | 0.00 | 0.00 |
| **Vitamin premixture** | **%** | 1.00 | 1.00 | 1.00 |
| **Minerals & trace element premix** | **%** | 6.00 | 6.00 | 6.00 |
| **Sodium bicarbonate** | **%** | 0.50 | 0.50 | 0.50 |
| **Monocalciumphosphate** | **%** | 1.10 | 1.10 | 1.10 |
| **Calcium carbonate** | **%** | 0.60 | 0.60 | 0.60 |
| **Choline CI** | **%** | 0.57 | 0.57 | 0.57 |
| **Flavour** | **%** | 0.25 | 0.25 | 0.25 |
| **Digest Cat** | **%** | 0.30 | 0.30 | 0.30 |
| **Pork lard** | **%** | 3.00 | 3.00 | 3.00 |
| **Poultry fat** | **%** | 6.00 | 6.00 | 6.00 |
| **Soybean oil** | **%** | 2.60 | 2.60 | 2.60 |

**Supplementary Table 5: Analytical analysis of the nutritional profile of longitudinal study diets**

|  |  |  |
| --- | --- | --- |
|  | **Units** | **Diets** |
|  | **0.55** | **0.71** | **1.37** |
|  | **Mean** | **SEM** | **Mean** | **SEM** | **Mean** | **SEM** |
| **Nutrition Values** |
| **Starch** | **%** | 39.11 | 0.17 | 39.01 | 0.12 | 39.56 | 0.22 |
| **Moisture** | **%** | 7.23 | 0.16 | 7.06 | 0.14 | 7.49 | 0.14 |
| **Protein** | **%** | 25.02 | 0.06 | 24.98 | 0.04 | 24.89 | 0.04 |
| **Fat** | **%** | 10.86 | 0.11 | 11.09 | 0.20 | 10.72 | 0.06 |
| **Ash** | **%** | 7.05 | 0.03 | 7.02 | 0.06 | 7.08 | 0.06 |
| **Nitrogen Free Extract** | **%** | 47.69 | 0.22 | 47.70 | 0.24 | 47.68 | 0.17 |
| **Predicted Metabolisable Energy** | **Kcal** | 368.62 | 0.90 | 370.44 | 0.93 | 366.95 | 0.55 |
| **Crude Fibre** | **%** | 2.15 | 0.09 | 2.15 | 0.05 | 2.13 | 0.06 |
| **Essential Fatty Acids** |
| **Linoleic acid** | **%** | 2.54 | 0.04 | 2.57 | 0.03 | 2.50 | 0.05 |
| **Alpha Linolenic acid** | **%** | 0.29 | 0.01 | 0.29 | 0.01 | 0.28 | 0.00 |
| **Aracidonic acid** | **%** | 0.02 | 0.00 | 0.02 | 0.00 | 0.01 | 0.00 |
| **Minerals** |
| **Calcium** | **%** | 1.24 | 0.01 | 1.25 | 0.01 | 1.25 | 0.01 |
| **Phosphorus** | **%** | 0.85 | 0.01 | 0.85 | 0.01 | 0.85 | 0.01 |
| **Sodium** | **%** | 1.46 | 0.01 | 1.46 | 0.01 | 1.47 | 0.01 |
| **Potassium** | **%** | 0.41 | 0.00 | 0.41 | 0.00 | 0.40 | 0.00 |
| **Magnesium** | **%** | 0.92 | 0.01 | 0.93 | 0.01 | 0.92 | 0.01 |
| **Iron** | **mg/kg** | 0.15 | 0.00 | 0.15 | 0.00 | 0.15 | 0.00 |
| **Copper** | **mg/kg** | 213.40 | 3.71 | 216.10 | 2.71 | 213.00 | 3.39 |
| **Manganese** | **mg/kg** | 16.07 | 0.70 | 14.56 | 0.53 | 15.15 | 0.65 |
| **Zinc** | **mg/kg** | 84.84 | 2.46 | 82.59 | 1.73 | 78.95 | 1.86 |
| **Iodine** | **mg/kg** | 138.00 | 1.41 | 139.90 | 1.13 | 138.00 | 1.35 |
| **Selenium** | **mg/kg** | 1.95 | 0.09 | 2.14 | 0.15 | 2.18 | 0.09 |
| **Chloride** | **%** | 0.70 | 0.01 | 0.70 | 0.02 | 0.69 | 0.01 |
| **Vitamins** |
| **Vitamin A** | **IU/kg** | 13650.00 | 193.36 | 14270.00 | 545.29 | 13723.08 | 545.63 |
| **Vitamin E** | **mg/kg** | 134.10 | 1.75 | 139.00 | 3.13 | 136.77 | 2.42 |
| **Thiamin** | **mg/kg** | 22.04 | 0.45 | 21.96 | 0.40 | 22.48 | 0.48 |
| **Riboflavin** | **mg/kg** | 15.42 | 0.61 | 15.41 | 0.36 | 14.88 | 0.38 |
| **Niacin/ Nicotinic acid** | **mg/kg** | 59.63 | 1.18 | 62.42 | 1.83 | 60.81 | 1.00 |
| **Pyridoxine** | **mg/kg** | 18.60 | 0.43 | 18.57 | 0.41 | 18.54 | 0.55 |
| **Pantothenic acid** | **µg/g** | 44.59 | 1.24 | 43.35 | 2.41 | 45.50 | 1.14 |
| **Folic acid** | **mg/kg** | 7.65 | 0.16 | 7.66 | 0.14 | 7.29 | 0.15 |
| **Cyanocobalamin (Vit B12)** | **mg/kg** | 0.07 | 0.00 | 0.07 | 0.00 | 0.07 | 0.00 |
| **Choline** | **mg/kg** | 2209.00 | 45.47 | 2192.00 | 49.59 | 2205.38 | 28.90 |
| **Vitamin K3** | **mg/kg** | 3.57 | 0.16 | 4.05 | 0.23 | 3.92 | 0.13 |
| **Biotin** | **mg/kg** | 0.28 | 0.00 | 0.27 | 0.03 | 0.29 | 0.01 |
| **Vitamin D3** | **IU/kg** | 1063.70 | 33.83 | 1173.60 | 71.38 | 1100.38 | 58.39 |
| **Essential Amino Acids** |
| **Arginine** | **%** | 1.25 | 0.01 | 1.26 | 0.01 | 1.23 | 0.01 |
| **Histidine** | **%** | 0.72 | 0.01 | 0.73 | 0.02 | 0.71 | 0.01 |
| **Isoleucine** | **%** | 0.86 | 0.00 | 0.86 | 0.01 | 0.87 | 0.01 |
| **Leucine** | **%** | 1.60 | 0.01 | 1.58 | 0.01 | 1.60 | 0.01 |
| **Lysine** | **%** | 1.45 | 0.01 | 1.47 | 0.01 | 1.46 | 0.01 |
| **Methionine** | **%** | 0.20 | 0.00 | 0.26 | 0.00 | 0.51 | 0.01 |
| **Cystine** | **%** | 0.83 | 0.01 | 0.77 | 0.01 | 0.52 | 0.00 |
| **Phenylalanine** | **%** | 1.03 | 0.01 | 1.03 | 0.01 | 1.02 | 0.01 |
| **Tyrosine** | **%** | 0.90 | 0.01 | 0.90 | 0.01 | 0.90 | 0.01 |
| **Threonine** | **%** | 1.03 | 0.01 | 1.03 | 0.02 | 1.03 | 0.01 |
| **Tryptophan** | **%** | 1.93 | 0.01 | 1.94 | 0.02 | 1.93 | 0.02 |
| **Valine** | **%** | 0.94 | 0.01 | 0.93 | 0.01 | 0.92 | 0.01 |