# Dog Food Standards by the AAFCO

*Drs. Foster & Smith Educational Staff*

Dog foods labeled as 'complete and balanced' must meet standards established by the Association of American Feed Control Officials (AAFCO) either by meeting a nutrient profile or by passing a feeding trial. In 1995, the AAFCO's Canine Nutrition Expert Subcommittee revised their Dog Food Nutrient Profiles.

There are now two separate nutrient profiles for dogs - one for growth (puppies) and one for adult maintenance. Maximum levels of intake of some nutrients have been established for the first time because of concern that overnutrition, rather than undernutrition, is a bigger problem with many pet foods today. The standards include recommendations on protein, fat, fat soluble vitamins, water soluble vitamins, and mineral content of foods.

The levels of nutrients in the table below are expressed on a 'dry matter' (DM) basis. On most pet food labels, the levels listed in the guaranteed analysis are expressed on an 'as fed' basis. To convert 'as fed' to 'dry matter' a simple conversion is necessary. If a dry food has 10% moisture we know that it has 90% dry matter. So we look at the label and check the protein level. That reads 20%. Next, we divide the 20 percent protein by the 90% dry matter and we get 22%, which is the amount of protein on a dry matter basis. Does this make sense so far? Good. Now let us compare this to canned food that has 80% moisture. We know that with 80% moisture we have 20% dry matter. The label shows 5% protein. So we take the 5% and divide it by 20% and we get 25% protein on a dry matter basis. So the canned food has more protein per pound on a dry matter basis after all the water is taken out. We can do the same for fat, fiber, etc.

AAFCO Dog Food Nutrient Profiles Published in 2008[a]

| Nutrient | Units DM Basis | Growth and Reproduction Minimum | Adult Maintenance Minimum | Maximum |
|---|---|---|---|---|
| Protein | % | 22.0 | 18.0 | - |
| Arginine | % | 0.62 | 0.51 | - |
| Histidine | % | 0.22 | 0.18 | - |
| Isoleucine | % | 0.45 | 0.37 | - |
| Leucine | % | 0.72 | 0.59 | - |
| Lysine | % | 0.77 | 0.63 | - |
| Methionine-cystine | % | 0.53 | 0.43 | - |
| Phenylalanine-tyrosine | % | 0.89 | 0.73 | - |
| Threonine | % | 0.58 | 0.48 | - |
| Tryptophan | % | 0.20 | 0.16 | - |
| Valine | % | 0.48 | 0.39 | - |
| Fat[b] | % | 8.0 | 5.0 | - |
| Linoleic acid | % | 1.0 | 1.0 | - |
| **Minerals** | | | | |
| Calcium | % | 1.0 | 0.6 | 2.5 |
| Phosphorous | % | 0.8 | 0.5 | 1.6 |



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| | | | | |
|---|---|---|---|---|
| Ca:P ratio | % | 1:1 | 1:1 | 2:1 |
| Potassium | % | 0.6 | 0.6 | - |
| Sodium | % | 0.3 | 0.06 | - |
| Chloride (Cl) | % | 0.45 | 0.09 | - |
| Magnesium | % | 0.04 | 0.04 | 0.3 |
| Iron[c] | mg/kg | 80.0 | 80.0 | 3,000.0 |
| Copper[d] | mg/kg | 7.3 | 7.3 | 250.0 |
| Manganese | mg/kg | 5.0 | 5.0 | - |
| Zinc | mg/kg | 120.0 | 120.0 | 1,000.0 |
| Iodine | mg/kg | 1.5 | 1.5 | 50.0 |
| Selenium | mg/kg | 0.11 | 0.11 | 2.0 |
| **Vitamins** | | | | |
| Vitamin A | IU/kg | 5,000.0 | 5,000.0 | 250,000.0 |
| Vitamin D | IU/kg | 500.0 | 500.0 | 5,000.0 |
| Vitamin E | IU/kg | 50.0 | 50.0 | 1,000.0 |
| Vitamin B1 (thiamin)[e] | mg/kg | 1.0 | 1.0 | - |
| Vitamin B2 (riboflavin) | mg/kg | 2.2 | 2.2 | - |
| Vitamin B5 (pantothenic acid) | mg/kg | 10.0 | 10.0 | - |
| Vitamin B3 (niacin) | mg/kg | 11.4 | 11.4 | - |
| Vitamin B6 (pyridoxine) | mg/kg | 1.0 | 1.0 | - |
| Folic Acid | mg/kg | 0.18 | 0.18 | - |
| Vitamin B12 (cyanocobalamin) | mg/kg | 0.022 | 0.022 | - |
| Choline | mg/kg | 1200.0 | 1200.0 | - |
| | | | | |



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| [a] Presumes an energy density of 3.5 kcal ME/g DM (metabolizable energy/gram dry matter), as determined in accordance with Regulation PF9, which is based on the 'modified Atwater' values of 3.5, 8.5, and 3.5 kcal/g for protein, fat, and carbohydrate (nitrogen-free extract, NFE), respectively.<br><br>Rations greater than 4.0 kcal/g should be corrected for energy density; rations less than 3.5 kcal/g should *not* be corrected for energy.<br><br>Rations of low-energy density should not be considered adequate for growth or reproductive needs based on comparison to the Profiles alone. |
| [b] Although a true requirement for fat per se has not been established, the minimum level was based on recognition of fat as a source of essential fatty acids, as a carrier of fat-soluble vitamins, to enhance palatability, and to supply an adequate caloric density. |
| [c] Because of very poor bioavailability, iron from carbonate or oxide sources that are added to the diet should not be considered as components in meeting the minimum nutrient level. |
| [d] Because of very poor bioavailability, copper from oxide sources that are added to the diet should not be considered as components in meeting the minimum nutrient level. |
| [e] Because processing may destroy up to 90 percent of the thiamin in the diet, allowance in formulation should be made to ensure the minimum nutrient level is met after processing. |



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