Beyond the Guaranteed Analysis
COMPARING PET FOODS
Justin Shmalberg, DVM, Diplomate ACVN

The guaranteed analysis found on all pet foods sold under AAFCO guidelines cannot be used to compare one pet food to another.

The macronutrients listed are reported as minima and maxima, instead of the actual amount typically found in the food, and values listed are a percentage of weight as-fed. Diets vary in moisture and fiber content, creating differences in the number of calories per unit of weight (caloric density).

Pets are fed by calorie, not by weight, so comparisons should ideally be expressed in the amount of a particular nutrient per calorie.

- Typical content of protein and fat can be estimated by adding 1.5% to the protein minimum and 1% to the fat minimum.1
- This information can be subsequently used to determine grams of protein and fat per 1000 kcal—the preferred unit for pet food comparison.2

Any 2 pet foods can be accurately compared when the caloric basis is either calculated as described (Table 1) or:

- Obtained from manufacturers or via consultation services
- Found online or in product guides.

A general comparison tool for commercial pet foods is provided along with the suggested dietary concentrations established by a research panel (Table 2).2 An example is provided that illustrates the method of comparison using the labels from 2 commercial products (Table 3).

### TABLE 1. STEP BY STEP: ESTIMATING NUTRIENT CONCENTRATION ON A CALORIC BASIS

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1. | Add 1.5% to protein percentage from pet food label.  
   Add 1% to fat percentage from pet food label. |
| 2. | Divide kcal/kg by 10,000 |
| 3. | Divide estimated protein % and fat % by number obtained in Step 2 |

### TABLE 2. COMPARISON OF PET FOODS BY CALORIC BASIS

<table>
<thead>
<tr>
<th>Canine Diets</th>
<th>NRC RA* (g/1000 kcal)</th>
<th>Low (g/1000 kcal)</th>
<th>Moderate (g/1000 kcal)</th>
<th>High (g/1000 kcal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>25</td>
<td>&lt; 60</td>
<td>60–90</td>
<td>&gt; 90</td>
</tr>
<tr>
<td>Fat</td>
<td>13.8</td>
<td>&lt;= 30</td>
<td>30–50</td>
<td>&gt; 50</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>n/a</td>
<td>&lt;= 50</td>
<td>50–90</td>
<td>&gt; 90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feline Diets</th>
<th>NRC RA* (g/1000 kcal)</th>
<th>Low (g/1000 kcal)</th>
<th>Moderate (g/1000 kcal)</th>
<th>High (g/1000 kcal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>50</td>
<td>&lt; 80</td>
<td>80–120</td>
<td>&gt; 120</td>
</tr>
<tr>
<td>Fat</td>
<td>22.5</td>
<td>&lt; 40</td>
<td>40–60</td>
<td>&gt; 60</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>n/a</td>
<td>&lt;= 35</td>
<td>35–70</td>
<td>&gt; 70</td>
</tr>
</tbody>
</table>

*National Research Council recommended allowance*

### TABLE 3. CONVERSION OF GUARANTEED ANALYSES + COMPARISON OF TWO COMMERCIAL DOG FOODS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>PET FOOD 1 (DRY)</th>
<th>PET FOOD 2 (WET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude protein (min)</td>
<td>25%</td>
<td>8%</td>
</tr>
<tr>
<td>Crude fat (min)</td>
<td>15%</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>kcal/kg</th>
<th>3606</th>
<th>1198</th>
</tr>
</thead>
</table>

### CONVERSION

- **Protein**
  - 1. 25% + 1.5% = 26.5%
  - 2. 3606 kcal/kg / 10,000 = 0.3606
  - 3. 26.5 / 0.3606 = 74 g/1000 kcal
- **Fat**
  - 1. 15% + 1% = 16%
  - 2. 3606 kcal/kg / 10,000 = 0.3606
  - 3. 16 / 0.3606 = 44 g/1000 kcal
- **FINAL RESULT**
  - Moderate protein / moderate fat

### REFERENCES

This information can be downloaded and printed for use in your practice at todaysveterinarypractice.com.
some of these trends and offering new product choices.

- As additional scientific information becomes available, veterinarians should be open to understanding owner concerns and philosophies about feeding.
- The nutrient composition of most diets can be assessed using available information.
- An increasing number of veterinary nutrition specialists are available for consultation.

AAFCO = Association of American Feed Control Officials; FLUTD = feline lower urinary tract disease; FDA = Food and Drug Administration; NRC = National Research Council; USDA = U.S. Department of Agriculture

References
2. Natural petfood: it’s all about the ingredients.
3. AAFCO.

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Justin Shmalberg, DVM, Diplomate ACVSN, is a clinical assistant professor of integrative medicine at University of Florida College of Veterinary Medicine. His service specializes in the incorporation of nutrition, rehabilitation, hyperbaric oxygen therapy, and acupuncture with conventional care; he holds certifications in acupuncture and herbal medicine. Dr. Shmalberg’s research interests include nutritional oncology, sports and rehabilitative nutrition, evaluations of new small animal dietary trends, and the safety and efficacy of Chinese herbal products. He received his DVM from University of Wisconsin-Madison.

Dr. Shmalberg completed an internship in veterinary acupuncture at University of Florida along with a residency in small animal clinical nutrition.