



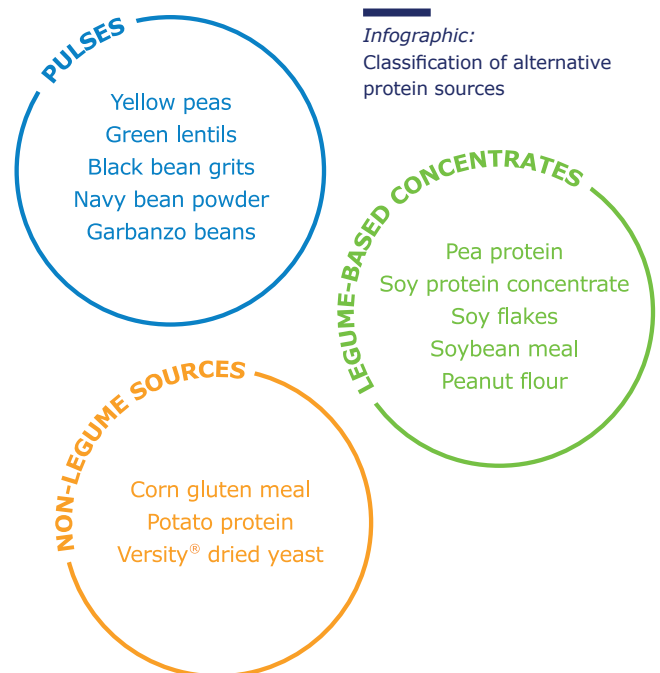
# Nutritional value of alternative proteins for dogs and cats.



In recent years, consumer demand and the humanization of pets has driven the need for pet food manufacturers to use novel proteins from animal and plant sources. With protein supply increasingly becoming a global issue, alternative protein sources are now important factors in the sustainability of the global food system for people and pets. Plant-based and yeast proteins are sustainable options that can be used in pet food and treats to supplement or replace animal protein ingredients.

Outside Voice<sup>SM</sup> is a proprietary consumer research tool used by ADM to quickly gain insights about the attitudes, preferences and behaviors of today's consumers. Data from Outside Voice<sup>SM</sup> revealed that 49% of the 5,000 adult (18+ years) respondents fall into the flexitarian category with health being the primary driver of their food choices. Many pet parents are flexitarians who want their dogs and cats eating similar foods as them. However, given that health is a key factor in choosing a flexitarian diet, pet parents need to be reassured that alternative protein sources are also healthy and safe for pets. For this reason, ADM completed a series of research projects in partnership with the Companion Animal Nutrition program at the University of Illinois Urbana-Champaign to evaluate the

nutritional value of various non-animal protein sources<sup>1-3</sup>. The infographic below shows the popular alternative protein sources that were chosen for the research.



The digestible indispensable amino acid score (DIAAS) is a research method for assessing protein quality. The protein quality of a food or ingredient directly relates to its limiting amino acids. This affects the ability of the animal to synthesize protein for various body functions and health.

A DIAAS of 100% or above is considered a high-quality protein source for dogs and cats, while scores less than 100% but greater than 50% represent moderate-quality proteins, and scores below 50% are low-quality proteins that are insufficient as a primary source for the respective amino acid<sup>3</sup>. For each ingredient, the amino acid with the lowest DIAAS below 100 represents the first limiting amino acid.

**Table:**  
Methionine DIAAS-like\* scores of protein sources for adult dogs and cats

|                                  | Dog                    | Cat   |
|----------------------------------|------------------------|-------|
| <b>PULSES</b>                    |                        |       |
|                                  | <b>DIAAS-like* (%)</b> |       |
| Yellow peas                      | 44.5                   | 106.8 |
| Green lentils                    | 30.5                   | 73.2  |
| Black bean grits                 | 51.3                   | 123.1 |
| Navy bean powder                 | 48.3                   | 115.7 |
| Garbanzo beans                   | 64.8                   | 155.4 |
| <b>LEGUME-BASED CONCENTRATES</b> |                        |       |
| Pea protein                      | 42.7                   | 102.4 |
| Soy protein concentrate          | 74.1                   | 177.6 |
| Soy flakes                       | 54.6                   | 131.0 |
| Soybean meal                     | 70.5                   | 168.9 |
| Peanut flour                     | 44.5                   | 106.7 |
| <b>NON-LEGUME SOURCES</b>        |                        |       |
| Corn gluten meal                 | 135.5                  | 325.0 |
| Potato protein                   | 118.6                  | 284.3 |
| Versity® dried yeast             | 99.9                   | 239.8 |

\*DIAAS-like (%) = [(mg of digestible indispensable amino acid in 1 g of dietary protein)/mg of same indispensable AA in 1 g of reference protein] × 100. Reference protein determined from the amount of each amino acid present in 1 g of protein from AAFCO nutrient profiles for adult dogs or cats.

#### References

- <sup>1</sup>Reilly LM, et al. *Front Vet Sci.* 2021;8(586).  
<sup>2</sup>Reilly LM, et al. *Transl Anim Sci.* 2020;4(3):txaa133.  
<sup>3</sup>Reilly LM, et al. *J Anim Sci.* 2020;98(6).

Ingredients with scores over 100 for all essential amino acids do not have a limiting amino acid and are capable of meeting all the requirements of the animal. Methionine is often the first limiting amino acid in dog and cat foods; DIAAS-like values for methionine are shown in the table. Additional DIAAS-like values for all essential amino acids for the alternative protein sources can be found [here](#). Notably, ADM Versity® dried yeast had a high quality DIAAS for all essential amino acids indicating it does not contain any limiting amino acids for adult dogs or cats.

While some of the alternative protein sources were found to contain limiting amino acids, they are appropriate for use in canine and feline foods when used with complementary ingredients and/or individual amino acid supplementation. The results of this research provide a deeper understanding of plant and yeast protein sources to assist in meeting formulation and product goals. At ADM we strive to provide solutions to the pet food industry and as such, we will continue to conduct ingredient research that supports the industry and ensures the health and well-being of dogs and cats.



Let's Collaborate.

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