



TECHNICAL REPORT

Corn in Pet Foods

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The use of corn in pet foods allows us to incorporate starch, protein, fiber, and fatty acids all from one source. There are many valuable nutrients contained by corn that can compliment our other ingredients nicely. Let's briefly review the nutrients provided by corn and its benefits for the pet.

Corn is an excellent source of energy because it contains approximately 80% carbohydrate. When comparing corn to other ingredients, few supply as much energy. The carbohydrate portion of corn can be over 95% digestible. In addition to the high digestibility of the carbohydrate portion, corn contains a moderate amount of fat. Fat produces 2.25 times the metabolizable energy per unit weight as carbohydrate. How is this helpful in pet foods? By incorporating corn, we can augment the energy of the diet. Within the fat content, corn is specifically high in linoleic acid which contributes to a healthy coat and skin.

Corn gluten is the protein portion of corn. Corn gluten meal (the dried form) provides a source of protein that is complimentary to many meat meal sources of protein. Its digestibility is as high as many meat and fish meals. Corn gluten meal's amino acid profile is quite different from meat-based protein sources. It is particularly high in the amino acid cystine. Again, it's worth re-stating that no one is suggesting that corn gluten be the sole source of protein, but that it makes a good addition to other protein sources. Another benefit is that as protein sources are concerned, corn has relatively low levels of ash.

Another key nutrient that corn supplies is a blend of carotenoids. Carotenoids are nutrients that are converted to vitamin A. Biologic functions that involve carotenoids are vision, skin health, reproduction, and bone and muscle growth. They also have a role as antioxidants.

If these are advantages to corn, then why is there such hesitancy in the market place when it comes to utilizing corn in pet foods? Here are some common arguments against corn:

1. "The incidence of food allergy to corn is high." This is simply not true. If anyone makes this argument, ask for the research that shows this. Studies show an incidence rate of 1.5% of adverse reactions to food are caused by corn. This is no different than the incidence rate of reaction to rice.
2. "Corn is not digestible." Not all animals can digest whole corn well, but when the kernel is broken by grinding, the germ (fat), starch (carbohydrate), and gluten (protein) are accessible and digestible (>91% digestible).
3. "Carnivores like cats and dogs do not do well on a diet high in grains." This stems from a misunderstanding in the definition of carnivore. Being a carnivore simply means that to get all of the essential nutrients in the diet in the wild, some animal protein would have to be in the diet. It does not mean that these animals have to subsist solely on meat.
4. "Corn is a cheap way to add 'filler' to the diet." At Royal Canin, we do not add "fillers" to our diets. Corn has superior nutritional value - fillers have no nutritional value.

However, it is important to understand that either rejecting or accepting a pet food based on the ingredient list is an oversimplification at best, and more likely evidence of lack of nutritional understanding. There is no single protein or carbohydrate source that is ideal. Each ingredient has its advantages, and so combinations of ingredients allow us to construct formulas with very specific features. Some manufacturers would have our customers believe that using certain ingredients is an attempt to cut costs, and that using those ingredients is choosing profit over quality. Not only is this incorrect, it demonstrates a lack of understanding of dog and cat physiology.

For example, Light 37 has a high protein level to assist in weight loss while maintaining lean muscle mass. It contains wheat gluten, corn gluten meal, and chicken as protein sources. Wheat gluten is extremely digestible and reduces the amount of undigested protein that makes it to the small intestine. This is an important feature of this diet, because we need to incorporate a high level of protein, but with such a high level, undigested protein can contribute to fecal odor. Because wheat gluten is a plant protein, it is limited in taurine. Chicken is a good source of taurine, but not as digestible as wheat gluten. Corn gluten meal adds some of the sulfur containing amino acids to balance the profile. By using all three, we are able to achieve an effect that is not possible with any of the individual constituents.