



THE NATURAL AUTHORITY™

ON GLUTEN vs. CORN GLUTEN MEAL

Introduction

Gluten is the protein portion of grains and is comprised of several proteins including, glutenins and prolamins, which have unique physiological properties. Examples of concentrated gluten sources in pet foods include wheat gluten, rice gluten, and corn gluten meal. These protein products are derived from the endosperm part of the grain, which is between the outer bran shell and the inner “live seed” or germ. The carbohydrate portion of the endosperm is processed into starch products, whereas the protein portion is used to make gluten.

How is gluten related to food sensitivities?

In food sensitivities, immunological reactions are formed against certain protein components within a protein source. In grains, the prolamin proteins within the gluten normally cause food sensitivities. The most allergenic prolamins are in *wheat*, and are called *gliadins*. Wheat gliadins have structural similarities to *barley* and *rye* prolamins, because they are in the same grain subfamily. Corn and rice prolamins are not as similar in structure to wheat gliadins; and therefore often do not aggravate food sensitivities.¹ Oat products are often “contaminated” with wheat gluten due to farming and manufacturing processes and thus may pose a risk of aggravating wheat sensitivities .

Gluten						
Glutenins	Prolamins					
	Gliadins	Secalins	Hordeins	Avenins	Oryzins	Zeins
	Wheat	Rye	Barley	Oats*	Rice	Corn
	Higher potential for food sensitivity			Lower potential for food sensitivity		

Wheat, barley and rye aggravate a number of diseases in humans, including Celiac Disease (gluten-sensitive enteropathy), wheat allergy, wheat-sensitive idiopathic neuropathy and Crohn’s Disease. Wheat gluten allergy has been reported in dogs and cats, and wheat gluten-sensitive enteropathy has been described in dogs.² However, the reported prevalence of wheat gluten allergy is low, at 13% and 7% of identified single-sourced food allergies in dogs and cats, respectively.³

In sensitive humans and pets, gluten can cause disturbances in digestion. Wheat gluten-sensitive enteropathy can damage the intestinal lining, often causing diarrhea due to nutrient malabsorption.⁴ Additionally, some prolamin proteins in wheat, barley and rye inhibit trypsin and alpha-amylase, two important enzymes in protein and carbohydrate digestion.⁵

Is there a difference between gluten and corn gluten meal?

Gluten has different physiological properties depending on its grain source, which is why corn gluten meal is not the same as gluten. “Gluten” on food packaging often refers to wheat, rye and barley sources. For instance, the term “gluten-free” often means it contains no wheat, rye or barley, whereas rice or corn may be present in these foods.

Compared to other protein sources, the protein digestibility of corn gluten meal is similar to or better than the digestibility of animal meal protein sources.⁶ Corn gluten meal has an amino acid profile that is complimentary to animal-based proteins, including high levels of sulfur amino acids, which are important in skin and coat health. Corn gluten meal provides protein without excessive minerals, whereas animal protein sources are often higher in mineral levels. In certain formulas, mineral levels need to be controlled for optimal pet health, such as in cat formulas to promote urinary tract health, and in puppy formulas to promote optimal skeletal development.

¹Cielitira & Ellis (2009) Classification of proteins in cereal grains: What is toxic and how is it measured in foods? In: Gluten-Free Food Science and Technology.

²Hall et al. (1992) Immune responses to dietary antigens in gluten-sensitive enteropathy of Irish Setters. Res Vet Sci 53:293-299.

³Verlinden et al. (2006) Food allergy in dogs and cats: a review. Crit Rev Food Sci Nutr 46:259-273.

⁴Davenport & Remillard (2010) Introduction to gastrointestinal disease and exocrine pancreatic disease. In: Small Animal Clinical Nutrition 5th Ed.

⁵Shewry et al. (2002) Plant protein families and their relationship to food allergy. Biochem Soc Trans 30:906-910.

⁶Data on file, The Nutro Company 2011

NATURAL CHOICE® Grain Free Dog Foods are gluten free to reduce the likelihood of aggravating grain-specific food sensitivities. Certain NUTRO® Formulas contain corn gluten meal to optimize protein levels while controlling mineral levels.



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