

HOT TOPIC

Gluten in pet food



In focus

Gluten-free diets are increasingly popular in human nutrition and this in turn can influence pet food decisions. What exactly is gluten and why is it found in pet food?

The Purina Institute provides the scientific facts to support your nutritional conversations.

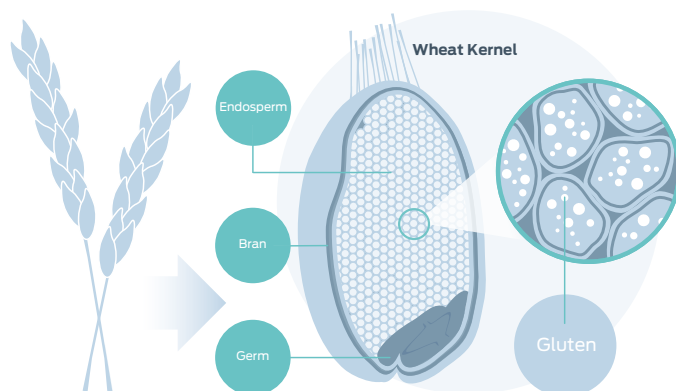
Gluten, grains and celiac disease: explaining the connection

Gluten is a collective term referring to the storage protein found in grains. Wheat, barley and rye belong to a family of grasses known as Triticeae. The gluten found in these particular grains contains gliadin, a protein fraction that can trigger the allergic response in humans with celiac disease.¹

Oats belong to another family of grains known as Aveneae. The gluten found in oats contains avenin,² which is a slightly different protein than gliadin and does not trigger the same allergic response. Whether or not oats belong in a gluten-free celiac diet for humans is still under debate.^{3,4}

let's
takeback
the conversation.

Learn more about the power of nutrition at
PurinaInstitute.com



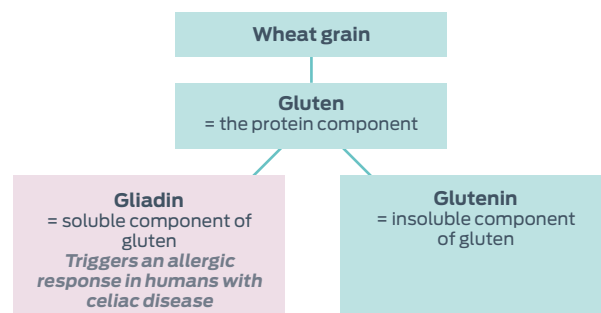
Since other grains, e.g., corn (or maize), rice, millet and sorghum do not contain gliadin, they are typically referred to as 'gluten-free' and are safe for people with celiac disease and for pets with wheat gluten sensitivities.

'Corn gluten meal' is a name given by regulatory authorities to a specific ingredient that is a by-product of corn (or maize) and often used in pet foods as a good source of protein with high levels of leucine and methionine. However, the term may be misleading, as corn gluten meal does not contain gliadin, only corn proteins.

| Grain | Safe for gluten sensitivities |
|--|-------------------------------|
| Wheat (Including varieties like spelt, kamut, farro, durum, and products like bulgur wheat, semolina etc.) | ✗ |
| Barley | ✗ |
| Rye | ✗ |
| Triticale (a hybrid of wheat and rye) | ✗ |
| Oats | ? |
| Corn/Maize | ✓ |
| Millet | ✓ |
| Rice | ✓ |
| Sorghum | ✓ |

Why is there a concern about gluten in foods?

The gluten found in wheat, barley and rye is one of the factors that can trigger an allergic response in humans with celiac disease.¹ Celiac disease is a human autoimmune disease that affects genetically susceptible individuals.⁵ Importantly, celiac disease has not been identified in dogs or cats, but because of its notoriety, pet owners frequently inquire about gluten as a potential cause of health issues in their pets.⁶



Globally, only up to 1% of people have celiac disease,⁵ but others follow gluten-free diets in an attempt to ease gastrointestinal complaints, or in the belief that they will look or feel healthier. Pet food trends tend to follow human nutrition trends, and pet owners may assume that gluten-free diets are a healthy choice for their pets too.

Gluten allergies in pets

Food allergies in general are uncommon in dogs and cats. The typical clinical sign of adverse food reactions in dogs and cats is pruritus or itchy skin,⁷ but food allergy is responsible for only 1% of skin diseases in dogs and cats.⁸ Food allergies are only the third most common occurring skin allergy after flea allergies and atopy (inhaled allergens).⁸

Gluten allergies are extremely rare in dogs and have not been identified in cats.

When food allergies do occur in dogs and cats, they are rarely due to gluten. They are driven, in part, by prior exposure to the protein in question.^{8,9} According to the literature, most pets that have food allergies are allergic to animal proteins like beef or dairy,^{8,10} which may reflect how commonly these ingredients have traditionally been found in commercial diets. Grain glutes are not more or less allergenic than any other protein.

Only a very specific family line of Irish Setter dogs¹¹ and a group of Border Terrier dogs^{12,13} have been diagnosed with a type of gluten sensitive enteropathy. For these breeds, a gluten-free diet containing corn (or maize) or rice are good options.

Wheat gluten is a source of highly digestible protein¹⁴ and provides texture and elasticity to pet food.

References

- Morón, B., Cebolla, A., Manyani, H., Alvarez-Maqueda, M., Megias, M., Thomas, Mdel C., López, M. C., & Sousa, C. (2008). Sensitive detection of cereal fractions that are toxic to celiac disease patients by using monoclonal antibodies to a main immunogenic wheat peptide. *American Journal of Clinical Nutrition*, 87(2), 405–414. doi:10.1093/ajcn/87.2.405
- Fric, P., Gabrovska, D., & Nevoral, J. (2011). Celiac disease, gluten-free diet, and oats. *Nutrition Reviews*, 69(2), 107–115. doi:10.1111/j.1753-4887.2010.00368.x
- Thompson, T. (2003). Oats and the gluten-free diet. *The Journal of the American Dietetic Association*, 103(3), 376–379. doi:10.1053/jada.2003.50044
- Pinto-Sanchez, M.I., Causada-Calo, N., Bercik, P., Ford, A.C., Murray, J.A., Armstrong, D., Semrad, C., Kupfer, S.S., Alaedini, A., Moayyedi, P., Leffler, D.A., Verdu, E.F., and Green, P. (2017). Safety of adding oats to a gluten-free diet for patients with celiac disease: Systematic review and meta-analysis of clinical and observational studies. *Gastroenterology*, 153(2), 395–409. doi:10.1053/j.gastro.2017.04.009
- Gujral, N., Freeman, H.J., & Thomson, A.B.R. (2012). Celiac disease: Prevalence, diagnosis, pathogenesis and treatment. *World Journal of Gastroenterology*, 18(42), 6036–6059. doi:10.3748/wjg.v18.i42.6036
- Rudinsky, A.J., Rowe, J.C., & Parker, V.J. (2018). Nutritional management of chronic enteropathies in dogs and cats. *Journal of the American Veterinary Medical Association*, 253(5), 570–578. doi:10.2460/javma.253.5.570
- FEDIAF (The European Pet Food Industry). (2019). *Nutritional Guidelines for Complete and Complementary Pet Food for Cats and Dogs*. http://www.fedif.org/images/FEDIAF_Nutritional_Guidelines_2019_Update_030519.pdf
- Verlinden, A., Hesta, A., Millet, S., & Janssens, G.P.J. (2006). Food allergy in dogs and cats: a review. *Critical Reviews in Food Science and Nutrition*, 46, 259–273. doi:10.1080/1040839059100117
- Cave, N. J. (2006). Hydrolyzed protein diets for dogs and cats. *Veterinary Clinics of North America Small Animal Practice*, 36, 1251–1268.
- Gaschen, F. P., & Merchant, S. R. (2011). Adverse food reactions in dogs and cats. *Veterinary Clinics of North America Small Animal Practice*, 41(2), 361–379. doi: 10.1016/j.cvsm.2011.02.005
- Hall, E. J., & Batt, R. M. (1992). Dietary modulation of gluten sensitivity in a naturally occurring enteropathy of Irish setter dogs. *Gut*, 33(2), 198–205. doi: 10.1136/gut.33.2.198
- Lowrie, M., Hadjivassiliou, M., Sanders, D.S., & Garden, O.A. (2016). A presumptive case of gluten sensitivity in a Border Terrier: a multisystem disorder? *Veterinary Record*, 179:573. doi: 10.1136/vr.103910
- Lowrie, M., Garden, O.A., Hadjivassiliou, M., Harvey, R.J., Sanders, D.S., Powell, R., & Garosi, L. (2015). The clinical and serological effect of a gluten-free diet in Border Terriers with epileptoid cramping syndrome. *Journal of Veterinary Internal Medicine*, 29, 1564–1568. doi: 10.1111/jvim.13643
- Brown, W.Y. (2009). Nutritional and ethical issues regarding vegetarianism in the domestic dog. *Recent Advances in Animal Nutrition – Australia*, 17, 137–143.