

HOT TOPIC

Fiber in Pet Food



SUGAR BEET



In focus

High fiber diets are often recommended for people to support a healthy digestion. What is the role of fiber in pet foods?

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

let's
takeback
the conversation.

Learn more about the power of nutrition at
PurinaInstitute.com

What is fiber?

Fiber is the indigestible fraction of a carbohydrate; the body's digestive enzymes cannot break it down. Fiber in pet food usually comes from plant sources.

Fiber can be classified as either **soluble** or **insoluble**, which simply describes whether it can dissolve in water. Many natural fibers contain a mixture of soluble and insoluble components.^{1,2}

While cats and dogs do not have the enzymes to digest fiber, the beneficial bacteria living in the colon (large intestine) can break down or 'ferment' certain fibers. The beneficial bacteria use **fermentable** fiber as an energy source. Although exceptions exist, soluble fibers typically are more fermentable than insoluble fibers.^{1,2}

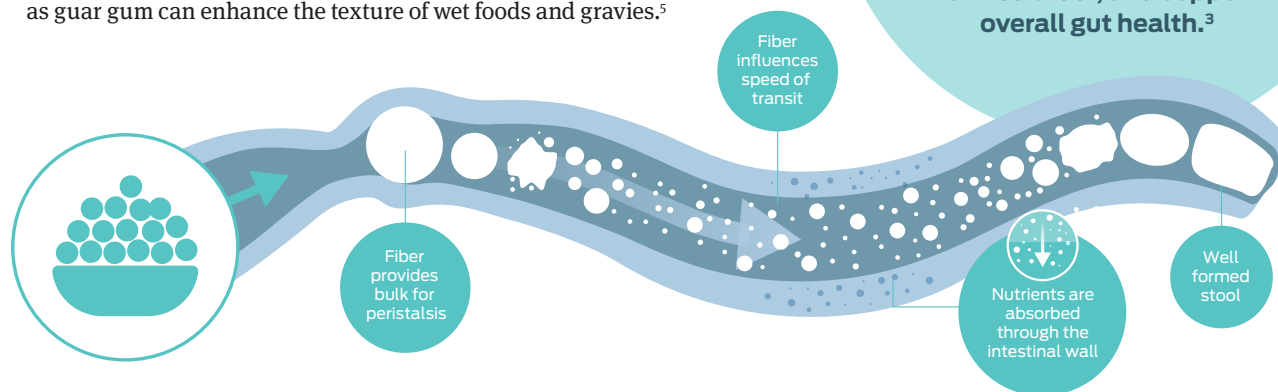
Common fibers in pet food	Soluble or insoluble ^{1,3}	Fermentable
Beet pulp (from sugar beet)	Mixture	++
Cellulose	Insoluble	-
Guar gum	Soluble	+++
Inulin	Soluble	++
Pea fiber	Mixture	++
Soybean hulls	Mixture	++
Whole grains	Mixture	+

Fibers that are both fermentable **and** can stimulate the growth and/or activity of beneficial gut bacteria are called prebiotic fibers (see 'Hot Topic: Prebiotics').^{1,3}

What is the role of fiber in pet food?

Fiber has many different functions and provides a number of benefits for pets:

- Supports the movement of food through the intestinal tract – depending on the type of fiber, it can have a bulking effect and can stimulate contraction and relaxation of the muscles in the gut wall (peristalsis) which helps with the transit of the food. High levels of insoluble fiber can increase the speed that food passes through the intestines. Since dogs and cats have short intestinal tracts, if food moves too quickly, this reduces the time for nutrients to be absorbed.^{1,3}
- Affects both the volume and quality of stool – since fiber cannot be digested, a higher fiber diet typically increases the volume of stool produced. Fiber promotes regular bowel movements and plays a role in absorbing water. Certain fibers such as beet pulp hold more water, thus helping soften hard stool and also help the production of well-formed stools.^{1,3}
- Exfoliation of intestinal cells – insoluble fiber particles act as a natural exfoliant, sloughing off dead gut cells thereby helping stimulate the turnover of intestinal cells.⁴
- Production of short chain fatty acids (SCFAs) – fermentable fibers are broken down by the beneficial bacteria, producing SCFAs (e.g., butyrate) and are used by the intestinal cells as a source of energy, especially in the colon or large intestine. The cells grow and multiply, increasing the surface area of the colon lining, which helps maximize nutrient absorption.^{2,3}
- Influences both the texture and consistency of pet food – gum-type soluble fibers, sourced from certain seeds and beans, such as guar gum can enhance the texture of wet foods and gravies.⁵



When is high fiber beneficial for a pet?

- Higher levels of fiber are used in some weight loss diets. Fiber helps dilute the amount of calories in the food, thus increasing the amount of food and the ‘volume in the bowl’ which can help pet owners managing weight loss in their pets. Fiber can also help the pet feel more satiated.⁶
- Certain fibers have been shown to minimize the formation of hairballs in cats. E.g., cellulose and soybean hulls help increase gastric emptying, decreasing the ability of hairballs to form in the stomach.⁷
- Higher fiber in the diet, coupled with increased water intake, may help with constipation.²
- Fiber helps slow the absorption of carbohydrates from food. This helps minimize the sharp spikes in blood glucose levels seen after eating certain foods. This may have benefits in diabetes mellitus.^{8,9}

References

1. Fiber frustrations. (2019, November 4). Retrieved from <https://vetnutrition.tufts.edu/2019/11/fiber-frustrations/>
2. Cave, N. (2012). Nutritional management of gastrointestinal diseases. In A. J. Fascetti & S. J. Delaney (Eds.), *Applied veterinary clinical nutrition* (pp. 175-219). Wiley-Blackwell. doi: 10.1002/9781118785669.CH12
3. Case, L. P., Daristotle, L., Hayek, M. G., & Raasch, M. F. (2011). *Canine and feline nutrition: A resource for companion animal professionals* (3rd ed.). Mosby.
4. Fiber. (2019, March). Retrieved from <https://lpi.oregonstate.edu/mic/other-nutrients/fiber>
5. Delaney, S. J., & Fascetti, A. J. (2012). Basic nutrition overview. In A. J. Fascetti & S. J. Delaney (Eds.), *Applied veterinary clinical nutrition* (pp. 9-22). Wiley-Blackwell. doi: 10.1002/9781118785669.ch2
6. German, A. J., Holden, S. L., Bissot, T., Morris, P. J., & Biourge, V. (2010). A high protein high fibre diet improves weight loss in obese dogs. *The Veterinary Journal*, 183(3), 294-297. doi: 10.1016/j.tvjl.2008.12.004
7. Chandler M. L., Guilford, W. G., Lawoko, C. R. O., & Whittem, T. (1999). Gastric emptying and intestinal transit times of radiopaque markers in cats fed a high-fiber diet with and without low-dose intravenous diazepam. *Veterinary Radiology & Ultrasound*, 40(1), 3-8. doi: 10.1111/j.1740-8261.1999.tb01831.x
8. Behrend, E., Holford, A., Lathan, P., Rucinsky, R., & Schulman, R. (2018). 2018 AAHA diabetes management guidelines for dogs and cats. *Journal of the American Animal Hospital Association*, 54(1), 1-21. doi: 10.5326/JAAHA-MS-6822
9. Laflamme, D. P. (2005). Nutrition for aging cats and dogs and the importance of body condition. *Veterinary Clinics of North America: Small Animal Practice*, 35(3), 713-742. doi: 10.1016/j.cvsm.2004.12.011