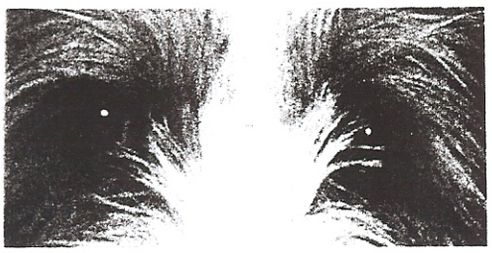
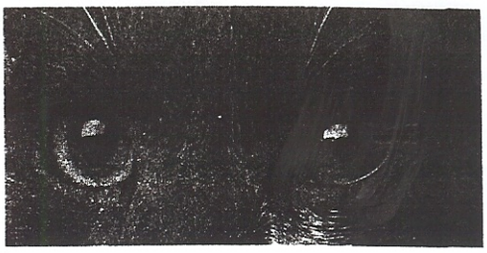


Something to Chew On!



Your Information Source on Pet Nutrition

The Role of Fibre in Pet Foods

By Dr. Chip Coombs, D.V.M.

Although not often considered by consumers as an essential ingredient of a balanced pet food, the role of fibre is both complex and important. The fibre content of a pet food is usually arrived at by proximate analysis whereby protein, fat, minerals and moisture are removed, leaving a nitrogen-free extract consisting of monosaccharides (e.g. glucose), available polysaccharides (e.g. starch) and unavailable polysaccharides (e.g. cellulose). Fibre is a non-starch plant polysaccharide that resists hydrolytic breakdown by digestive enzymes in the mammalian gut.

The term "fibre" which appears on a pet food label refers to "crude fibre" (defined as that portion of a diet which is not soluble in either hot alkali or acid) . However, it is ofttimes easier to think of fibre as either insoluble and relatively inert (e.g. cellulose) or soluble (e.g. pectins, carrageenan and other gums) in water. Foodstuffs commonly found in dry pet foods, which are high in soluble fibre, would include oats and oat bran, whereas insoluble fibre is commonly associated with the cereal grains such as wheat and wheat bran. Typical crude fibre levels in pet foods range from 2.5 - 5% and can vary as high as 24% in some specialized therapeutic foods. Levels below 2.5% would likely impede normal bowel function. C.V.M.A.'s recommended levels of fibre for optimum nutrition in a healthy pet vary between 3.5% and 6.0%.

Fibre serves many functions in a diet. One important role is the absorption of water, with soluble fibre having a greater capacity than insoluble. Fibre also acts as a bulking agent, both on its own and in conjunction with its water holding capacity, which increases colonic motility and muscle tone, with the presumption of healthier tissue. Consequently, fibre may be helpful in the resolution of constipation in some pets by increasing faecal mass and by softening stool through increased water absorption and retention.

Traditional thinking allowed that dietary fibre had no nutritional value. However, research in dogs has shown that, through the process of fermentation in the colon, soluble fibre can, to varying degrees, provide a source of metabolizable energy. In addition to energy, this fermentation produces a variety of short chain fatty acids (SCFA). One such SCFA, butyride, is a key source of energy for colonic epithelium, implying a role for some types of soluble fibre in the treatment of inflammatory bowel disease. SCFAs also lower intraluminal pH, thus minimizing certain bacterial overgrowths, such as Salmonella. Lower intraluminal pH will also minimize the uptake of ammonia through the colonic mucosa.

It is important to appreciate that many of the properties associated with fibre have been based upon work done in humans and rats. The inclination to extrapolate and draw inter-species conclusions may be unreliable, as there are significant anatomical and physiological differences involved. For example, there are claims that excessive fibre levels potentially compromise the bioavailability of certain micronutrients, such as zinc, calcium and iron. Yet some studies have contradictory conclusions and the implications for pet foods have been largely uninvestigated. Research in dogs has shown cellulose tolerance levels of 10 - 15 % of the diet without any adverse effects on the digestion of nutrients. However, fibre can tie up the availability of the amino acid taurine in cats, which may suggest the need for a higher dietary taurine content in cats on high fibre diets.

Studies on humans have implicated fibre as compromising the activity of pancreatic enzymes, although fibre appears not to impair enzyme secretion. While research in dogs is limited, at this time, high fibre diets are considered inappropriate for dogs with exocrine pancreatic inefficiency.

Fibre affects the transit time of food through the gastrointestinal tract, although the impact varies with fibre type. The use of higher than normal fibre content in the diets of diabetic cats is based, in part, upon the assumption that, by utilizing a fibre source that adds bulk to the food and increases retention time within the intestine, the result will lead to lower postprandial peaking of blood sugar levels. Again, such assumptions are based largely upon human research and the effectiveness in human diabetics is coming under greater scrutiny.

High fibre, low caloric density pet foods have been traditionally advocated for use in weight reduction programs based upon the principles of low caloric intakes and the feeling of satiety achieved through the effect of fibre on gastric distention. However, the resultant faecal mass achieved from some very high fibre diets can severely compromise owner compliance in the feeding of such diets.

For many pets, a diet with greater emphasis on restricted caloric density levels and less on insoluble fibre levels may be more successful in achieving the long term goal of weight reduction.

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