

## **Digestion in Dogs and Dietary Transitions Among Pet Foods**

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### **Introduction:**

Proportional to humans and other mammals, the total length of the gastrointestinal tract of dogs is much shorter overall. However, as a single-stomached animal used to eating an omnivorous diet, the digestive and absorptive mechanisms that need to occur are similar to humans; this process simply needs to take place much more quickly as food moves through the digestive system. A dog that has become accustomed to a specific diet will have achieved a unique cellular and biochemical balance within its gastrointestinal system. However, feeding the same diet day after day is not always possible or even desired.

### **The process of food digestion:**

Digestion of food is a biochemical process that depends on the amounts and kinds of naturally occurring enzymes, hormones, and physiologic conditions inside the stomach and intestines. This process also depends on the types of foods that are fed because the food, enzymes and hormones work together to assure healthy nutrition (1). Digestion also depends on an appropriate amount of water for hydration. Soluble and insoluble fibers help regulate the rates of absorption and provide intestinal health. In addition, the correct blend of proteins, fats, and carbohydrates provide energy, and contribute to cell structure and function. They also provide the building blocks to replenish new enzymes and hormones to keep everything going and in balance. Vitamins and minerals from both animal and plant sources also contribute to the mechanisms involved in nutrient utilization and health. Finally, a variety of intestinal microorganisms (i.e. the intestinal microbiome) regarded as good bacteria are also needed. Because there are so many mechanisms involved, it is no wonder why any disruption of these myriad processes can sometimes lead to digestive upset.

### **The importance of good digestive health:**

The cells lining the gastrointestinal tract possess their own immune system, which acts as the first line of defense against invading toxins, bacteria and viruses (1) in the food chain. This includes the ability to exclude allergy-promoting materials such as certain dietary proteins and is the result of specific antibodies (namely IgA) whose primary function is exclusion of such invaders (1).

Small amounts of naturally occurring toxins (xenobiotics) when ingested can also be handled by a healthy digestive tract and small amounts consumed and absorbed can generally be effectively dealt with by liver and kidney mechanisms. However, when these systems become overwhelmed or ineffective, problems such as toxicities or allergic reactions may occur. Dogs respond to allergens somewhat differently than humans. Dogs will generally react by showing either gastrointestinal or skin problems while humans usually react with itchy eyes and sneezing. Thus, maintaining a healthy digestive system is vitally important in dogs to prevent recurring problems.

### **Why digestive upset occurs when switching foods:**

Because the above processes depend in part on the food types being fed (i.e. the food “matrix”), changing a dog’s diet to a different formulation can sometimes lead to digestive upset resulting in stomach cramps, indigestion, gas, diarrhea, vomiting, regurgitation or refusal to eat. As noted previously, a dog’s digestive tract is shorter overall compared to humans and all digestive processes need to occur within a shorter time period. This places additional stress on the dog’s ability to digest and utilize food; this may be one reason why many dogs have “sensitive stomachs” and why some may have problems when a new food “matrix” is introduced.

Introduction of a new pet food causes changes in the gastrointestinal tract and some dogs appear to be more sensitive than others. When a food is changed, the biochemical digestive enzymes need to re-adjust and re-stabilize and may temporarily overshoot their activities before settling down to the new food. Hormone synthesis may also be affected. Furthermore, the digestive cells themselves need to re-adjust as do the distribution and types of intestinal microbiome needed for intestinal health. Because all of these processes are interdependent, digestive upset can occur when one process lags behind any of the others.

### **Switching your dog’s diet:**

Changing your dog’s diet may be desirable or even necessary for many different reasons. With the broad range of high quality pet foods on the market today, exploring new foods, brands or flavors is a good way to introduce variety into your dogs diet. For others, changing foods may be required in order to meet the specific dietary needs of your pet and for some, finding the right food may be a process of trial and error.

The traditionally recommended way to change a dog’s food has been to gradually make the transition by mixing the old food and new food over a period of time. Until recently there were no products on the market to assist in this process. A newly recognized alternative includes the use of a food supplement made from a special blend of different pumpkin varieties. This balanced fiber

supplement is designed for mixing with the new foods to ease the transition process and reduce digestive upset. This new product is provided by Vetscience® and is called Fruitables® Switch™ Food Transition Supplement.

### **Fruitables® Switch™ Food Transition Supplement: How it works**

Switch™ is a proprietary pumpkin blend that has a balanced level of both naturally occurring soluble and insoluble fiber types. Because it is rich in these fibers, it supports the dog's digestive system in rebalancing the digestive enzymes, hormones and good bacteria during a dietary change. In addition, insoluble fiber helps to regulate the rate of absorption from the digestive tract (2) so that the time needed to make these physiological changes can occur. In the lower bowel, soluble fiber can be fermented to short chain fatty acids thereby providing important nutrients to this part of the intestinal tract. Short chain fatty acids also have antibacterial properties and may help resist colonization by deleterious bacteria in the digestive tract (2). Antioxidants present in Switch™, including beta-carotene, may help stabilize the intestinal cells while they adapt to a diet change (3). Switch™ has a moderate content of carbohydrates, vitamins and minerals (4), but not excessively so, which may also help support diet transitioning. It is also highly palatable which reduces the possibility of food refusal that may occur with a dietary change. While amounts to use may vary from dog to dog, a 30% inclusion rate is generally recommended.

Switch's™ proprietary blend of pumpkin also contains several additional biologically active components such as polysaccharides, para-aminobenzoic acid, oils, plant sterols and peptides (5-7). In addition to the anti-oxidant activity of beta-carotene, many of the above compounds have been studied for their medicinal properties including anti-diabetic, anti-carcinogenic, and anti-inflammatory effects (4). Switch™ not only provides a safe and effective diet transition, but it's recognized antimicrobial properties may provide support for a healthy microbiome as diet changes are made (4). In addition, one study has evaluated the use of ripe pumpkin fruit in a rodent model of gastric and duodenal ulcers and has found a protective effect by increasing the defense mechanisms of cells lining these tissues (8).

Thus, periodically changing foods using Switch™ may have a positive impact on your dog's digestive health. It allows pet owners to provide some diet variability compared with feeding only a single food type for life, and adds a palatable alternative to picky eating.

#### References:

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