

# Tailor-made prebiotics for cats and dogs

PREBIOTICS, SUCH AS INULIN AND OLIGOFRUCTOSE, HAVE BEEN USED IN PET FOOD FOR SOME TIME NOW. HOWEVER, THE USE OF THESE INGREDIENTS IS DEPENDENT ON THE APPLICATION AND TYPE OF ANIMAL, ACCORDING TO PIOTR JANOWICZ, PET FOOD MANAGER AT ORAFI.

EMMY KOELEMAN SPOKE WITH HIM ABOUT THEIR NEW APPROACH IN ADDING TAILOR-MADE PREBIOTICS TO PET FOOD.

The phenomenon of pet humanisation has resulted in trends within the pet food industry that are taken over from the human consumer and food trends →



## Natural ingredient

Orafti's prebiotic series Beneo™ is a range of inulin and oligofructose ingredients extracted from the chicory roots. Inulin and oligofructose occur naturally in over 36,000 plants and vegetables. Inulin and oligofructose are composed by linear chains of fructose units, linked by  $\beta$  (2-1) bonds and are often terminated by a glucose unit. Oligofructose contains only short chains. The products modulate the intestinal microflora towards a healthier composition and activity.

Changes in demand for pet food, as a result of the increasing humanisation of pets and an increasing interest in the nutritional and health requirements of animals, are creating significant opportunities for manufacturers to develop higher value products. The days when owners fed all dogs the same dog food and all cats the same cat food are long gone. Manufacturers are becoming more aware of the specific needs during the different life stages of pets, and reflect this in tailor-made products and more premium brands. Premium dog and cat food in developed markets accounted for more than 72% of global pet food and pet care product sales in 2005. The premium segment increasingly attracted the attention of the major mid-priced manufacturers. This was most notable with world-leaders Mars and Nestlé, which invested in the development of super-premium brands, and thus intensified competition. Moreover, the growing popularity of premium products spurred a trend towards premium-orientated product innovation and marketing in the mass market as mid-priced brands looked to adapt to changing consumer demand.

## USING THE MOLECULES

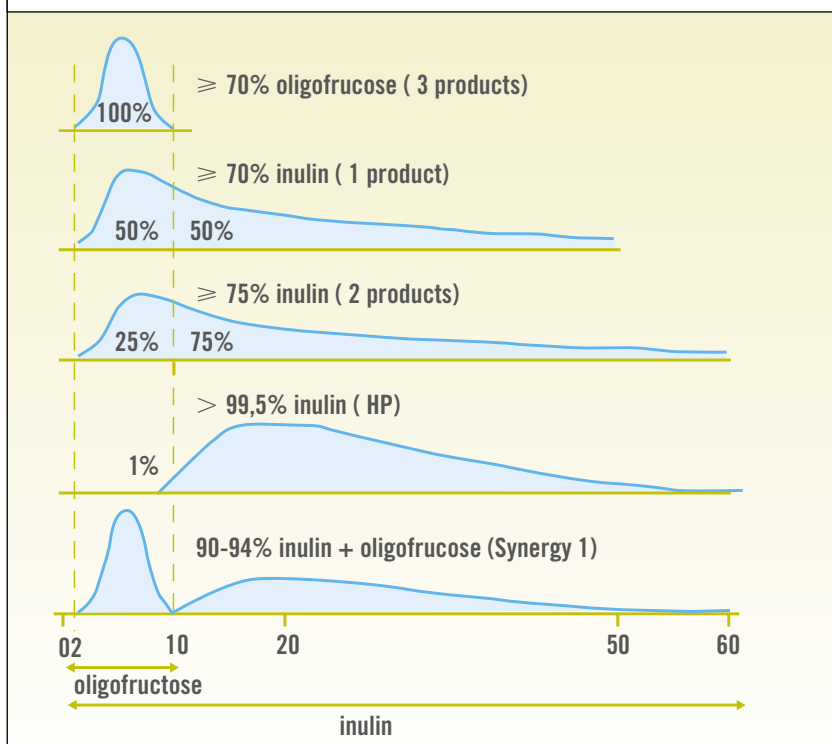
Global producer of the prebiotics inulin and oligofructose, Orafti Animal Nutrition, is also aware of the increase share of premium (tailor-made) brands for specific life stages and conditions of pets. It is, therefore, introducing a new concept in which specific prebiotic products are designed for different life stages and different purposes. Orafti is the only company that uses the specific molecules from the chicory roots and processes them further to purify them or to semi-refine them. This is different from other key companies that produce inulin and oligofructose from plain chicory roots and use these products simply as they are in their most natural form. "This is not wrong. We do the same, but we use the different molecules found in chicory roots for different purposes," explains Piotr Janowicz. We produce eight different products (all under the umbrella Beneo™), designed for different species (cat/dog) and for different life stages/lifestyles of the animal (Figure 1). The products differ in their composition; some have shorter chains (oligofructose) and some have a higher percentage of longer chains (inulin). By

combining the inulin and oligofructose in different ratios in one product, the application of the product becomes much more sophisticated. Furthermore, dosages are more precise, which is interesting in an economical point of view. Being more sophisticated means that specific prebiotic products can be used for different applications; some products are more suitable to use in wet pet food, and others are better suited in dry pet food. Customers may also like to use purified forms of prebiotics for their premium brands and the less purified (cheaper) ones for their mid segment and economy brands. In addition, prebiotics may also differ in taste and technological features. Oligofructose prebiotics high in reduced sugar are potentially involved in Maillard reaction. This is a chemical reaction between an amino acid and a sugar, which results in the production of a pleasant aroma. This in turn increases the palatability of the product.

### DIFFERENT LIFE STAGES

Determining the nutritional requirements of specific life stages has become a major area of research for manufacturers, with Procter & Gamble Iams subsidiary publishing a study that found puppies taking the food additive DHA were easier to train, for example. This fatty acid has been added to some baby formulas and has been found to enhance retinal and neural function in human infants. Research now suggests that it can do the same for pets. The increasing longevity of pets, supported by healthier diets and better veterinary care, has also boosted interest in life stage research. It has also created growing demand for products targeting senior dogs, as well as conditions such as arthritis, which commonly affect them. "Improving stool consistency and reducing odour are one of our primary focuses at the moment," says Janowicz. These problems are mainly caused by undigested proteins in the large intestine. By increasing

FIGURE 1 – DIFFERENCES IN FRUCTANS COMPOSITION



the number of good bacteria in the hindgut (by feeding prebiotics), the good bacteria will eat these undigested proteins, resulting in less smelly stools. However, certain problems or conditions in pets only occur in certain life stages. Body weight control, for example, is a specific problem in older animals. Nutrient absorption and strong bones are more desirable during the puppy/kitten and mid-age life stages (Figure 2).

### DIGESTIVE TRACT OF CATS AND DOGS

The digestive tracts of cats and dogs are not the same.

FIGURE 2 – RECOMMENDED USE OF PREBIOTICS DURING DIFFERENT LIFE STAGES OF CATS AND DOGS

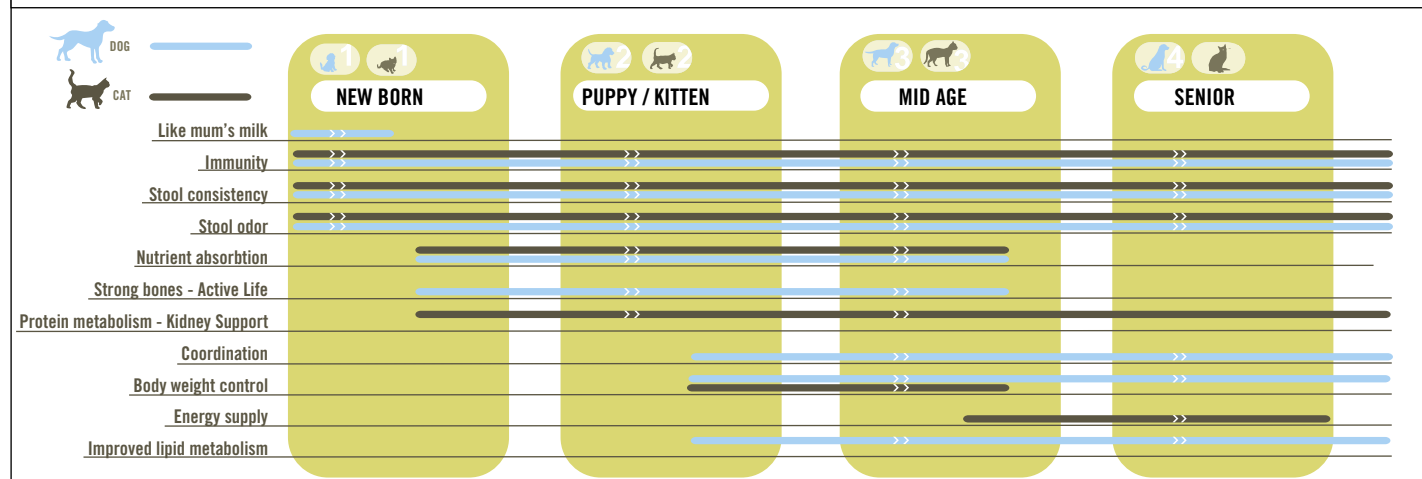
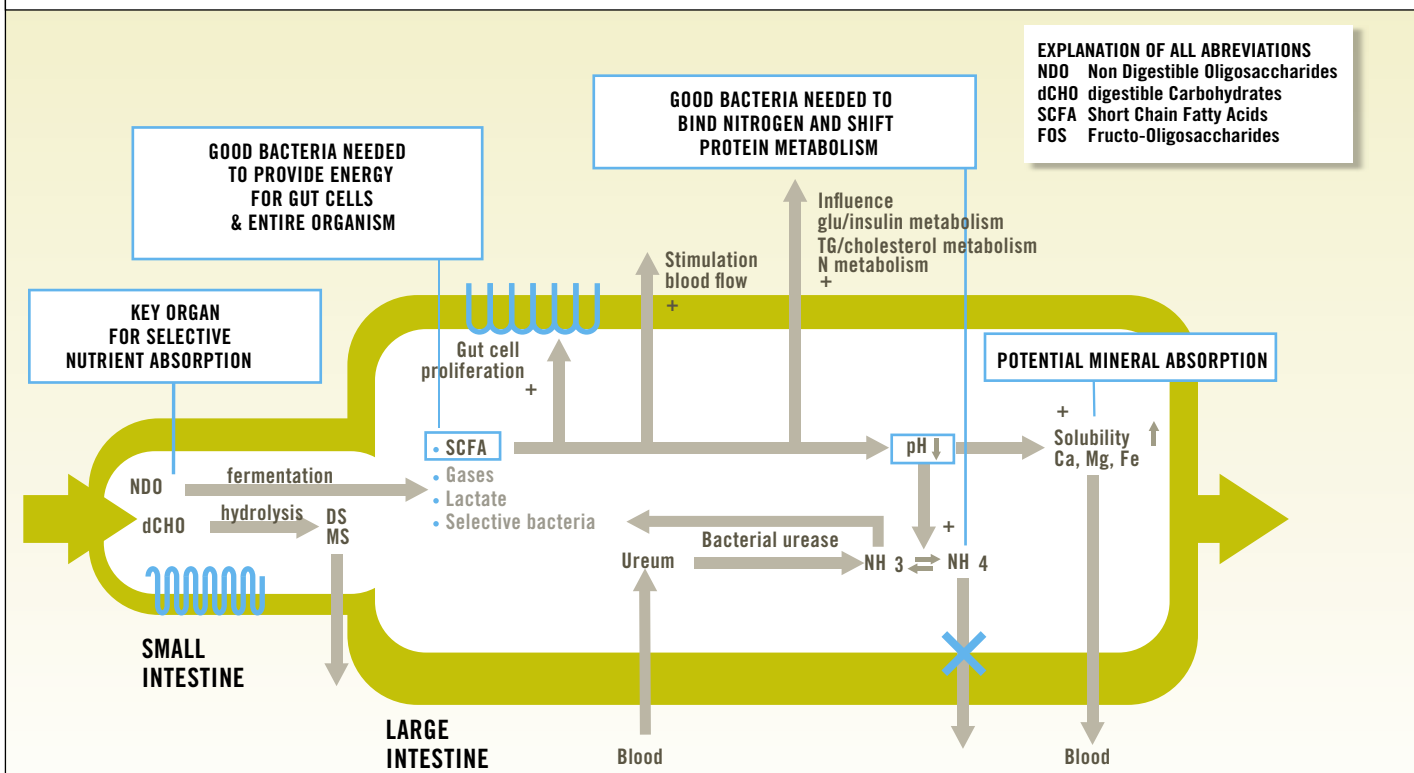


FIGURE 3 – HOW PREBIOTICS WORK IN THE SMALL AND LARGE INTESTINE



**Human food trends become pet food trends**

An increasing attitude toward pets as being family members in many developed markets has led to an increasing mirroring of human trends in the pet food and pet care products market. The rise in consumer health awareness, which has increasingly shaped developments across a broad range of human consumer goods, exerted a growing influence on pet food and pet care products in 2005, with the final year of the review period witnessing a growing trend towards products offering added functional ingredients, such as vitamins, calcium and DHA. Growing health concerns also underpinned the strong emergence of natural and organic products. This encouraged Wal-Mart, for example, to introduce its own organic private label in 2006. A recent published article in *New Nutrition Business* described the 10 key trends in human food. Interestingly enough, the majority of the trends are also seen in today's pet food industry.

- Trend 1: Weight management (also in pet food)
- Trend 2: Mood food (also in pet food)
- Trend 3: Healthy snacking (also in pet food)
- Trend 4: Fruit
- Trend 5: Digestive health (also in pet food)
- Trend 6: Kids nutrition (also in pet food - kitten/puppy)
- Trend 7: We are all turning Japanese, as in healthy food
- Trend 8: Beauty from within
- Trend 9: 'Naturally healthy' (also in pet food)
- Trend 10: Functional foods and health (also in pet food)

Source: *New nutrition business* (December 2006/January 2007)

The intestines of dogs are more similar to the human gut and adapted to take different sources of key nutrients. The digestive system of cats, however, is more adapted to protein metabolism, just like their wild carnivore family members. Cats therefore have a shorter intestinal tract than dogs. "Especially when feeding prebiotics, it is important to know these differences," says Janowicz. Our products work in the small intestine and specifically in the large intestine, where short chain prebiotics are dedicated for the proximal colon and long

chain prebiotics for distal colon support. By feeding the animals a combination of small and long chains, one can easily accomplish this. The small chains are fermented faster in a selective way than the longer chains. Rapidly fermented short chains can be used in animals with fast transit times (cats vs dogs). For a certain animal they can also be used to target a proximal part of the intestine (e.g. prevent SIBO in dogs). The longer chains migrate to more distal part where they exert their beneficial effect on gut function. The ideal combination of short and long fructan chains allows to design prebiotics for a particular animal species, with its typical physiological requirements (Figure 3).

**HESITANT**

"We still have to convince some pet food companies about the advances they can gain from using these tailor-made prebiotics." The pet food industry is a very innovative business, but producers are sometimes hesitant in replacing their existing prebiotics by other newly developed products, especially in their premium brands. And if they replace an ingredient, it has to be as close as possible to the original one. At the moment, Orafit's main focus is improving stool consistency and odour, as well as doing more research to support the products. The next focus in pet food will be more on what Orafit has successfully proofed in humans. These are related to specific energy metabolism issues and well-being. <-