

Canine and feline nutrition at the edge

ND Costa

*School of Veterinary Biology and Biomedical Science, Division of Veterinary and Biomedical Sciences,
Murdoch University, Murdoch, WA, 6150, Australia*

Australia has one of the highest rates of pet ownership in the world with 66% of households having pets, a higher rate than the United Kingdom (46%). There are approximately 4 million dogs and 2.6 million cats in Australia contributing over \$3 billion to the economy, with feeding costs accounting for 60%. Moreover, commercial pet foods have now become the predominant method of feeding, as measured by calorie penetration, for dogs (65%) and cats (53%). The major issues associated with this trend are the nutrient specifications, ingredient composition, and increasingly the non-nutritive aims and claims of commercial pet foods. The aim in feeding dogs and cats is maintaining weight and 'well-being' for life. In this regard, dogs and cats are comparable with humans. Nutrient requirements for dogs and cats are specified by the National Research Council (NRC). However, the pet food industry has found these specifications difficult to apply for dog food because they are based on absorbed nutrients due to difficulties in assessing bioavailability. As a consequence, the pet food manufacturers moved away from using NRC specifications to the Association of American Feed Control Officials (AAFCO) specifications based on dry matter concentrations. In the USA and Australia, AAFCO is now the preferred authority for nutrient requirements.

Dogs are predominantly carnivorous, and cats, obligate carnivores with both species having high protein requirements at maturity (18% and 26% respectively). Therefore, commercial pet foods are manufactured using meat and meat byproducts and in the case of dry feeds (< 10% moisture), extruded cereal grains. Dogs and cats have endogenous amylases and disaccharidases to digest gelatinised starch. Nevertheless, cats are susceptible to carbohydrate overload. Increasingly, ingredients are chosen to decrease the likelihood of food allergies associated with more commonly used ingredients such as beef, chicken, wheat and corn. Fibre type, amount and proportions of soluble and insoluble fibre are included to manage stool quality and amount. In addition, many commercial pet foods are now formulated to an omega-6: omega-3 essential fatty acid ratio between 5.0:1.0 to 10.0:1.0, with a series of claimed benefits for skin and coat condition, gut sensitivity, and progression of renal disease.

The latest focus of commercial pet food companies is on feeding for 'well-being', frequently using 'nutraceuticals' and functional foods. In fact, the range, the claims made, and the inferred benefits of nutraceuticals in pet nutrition present the same concerns for regulators and industry associations as they do for human nutrition. Prebiotics, particularly fructo-oligosaccharides (FOS), have been included to manage gut ecology with the aim of enhancing the proportion of 'beneficial' bacteria such as *Bifidobacteria sp.*. However, a number of studies have disputed increases in *Bifidobacteria sp.*, debated the optimum chemical form and dose of prebiotics, and failed to resolve the desired interaction with other dietary ingredients.

Thus the preferred authorities for specifying nutrient requirements, the nature and proportions of ingredients chosen for commercial pet foods and the non-nutritive claims by manufacturers have changed the feeding of dogs and cats significantly over the last ten years.