



Photo unsplash.com/Ben Hanson

Meat substitute as basis for vegetarian dogfood

Shear cell technology is used in Wageningen to turn vegetable proteins into meat substitutes with a fibrous structure. It seems these same meat substitutes make a good basis for vegetarian dogfood.

Ariane Wehrmaker discovered this during her PhD research in the Food Process Engineering chair group. Vegetable proteins plus some water and salt form the basis of the meat substitutes. The same recipe works for tinned vegetarian dogfood. At least, as long as the shelf life can be extended, for example through sterilization. Wehrmaker studied whether meat substitutes made using shear cell technology can withstand that heat process without loss of texture or nutrients.

Simulating stomach

‘The study showed that the sterilization process does not adversely affect the fibrous structure of the vegetarian meat,’ says the PhD candidate. The heat did cause the amino acids in the

food to break down to some extent, but Wehrmaker does not see that as a problem. ‘The concentration of amino acids in the end product is still higher than that of the dogfood currently on the market.’ The researchers do not yet

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Wehrmaker has not yet tested the food on animals but she has looked at whether the meat substitute can be digested by dogs. In the lab, she simulated the digestive system of dogs in a bottle: she put in chemicals to lower the PH value and digestive enzymes from dogs’ stomachs to replicate the situation in a real stomach. Then Wehrmaker monitored how the enzymes in the artificial digestive system digested

know whether the breakdown products themselves are harmful to dogs. In particular, the effect of eating them over a long period needs to be investigated.

the vegetarian dogfood. That turned out to go quite smoothly. ‘It is comparable to the digestion of commercial dogfood,’ says the PhD candidate.

Healthy for dogs

The PhD research shows that the shear-cell meat substitutes could be suitable for dogs too. But there is still some way to go before the dogfood can be sold in pet shops. For example, it doesn’t contain enough vitamins and minerals. ‘Like with other dogfood, we need to add a ready-made mix of vitamins and minerals,’ says Wehrmaker. That will be the next step in the research.

It is often claimed that a vegetarian diet is not healthy for dogs as descendants of the carnivorous wolf, but that is not correct, says Guido Bosch, assistant professor of Animal Nutrition and Wehrmaker’s co-supervisor. ‘Dogs need nutrients, not ingredients,’ he explains. It doesn’t matter whether those nutrients come from animals or plants. Wehrmaker is confident dogs can survive on a vegetarian diet. Her own dog is occasionally allowed to sample her lab creations, and she will continue her work at an animal feed company after she completes her PhD.

Pet food trends

Dog owners are increasingly looking for sustainable options for dogfood. ‘Trends in pet food tend to follow human food trends with a lag of two to five years,’ says Bosch. He expects that more companies will start producing vegetarian pet food in response to the increasing demand for such products. ‘We need to boost our knowledge now so the industry is able to make good, healthy products in the future. That way, we avoid a situation in which people start putting together food for their pets in their own kitchen without the necessary know-how, however good their intentions might be.’ NVTWH