# Early-life diet and canine atopy can have a connection

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Meat-based maternal diet during pregnancy and as the puppies' first solid diet during the early postnatal period (at 1–2 months of age), both showed a significant "protective" effect from atopy in adult age. Credit: Tani Simberg

Researchers from the international multidisciplinary research group "DogRisk" at the University of Helsinki have found novel early-life risk factors that impact the prevalence of atopic dermatitis in adult dogs. The results are also interesting for human medicine as the disease, atopy, is

very similar in young dogs and in children.

The identified risk factors include non-modifiable and modifiable variables in the pre- and postnatal age, being just before or after birth. This new knowledge empowers dog owners, opens up research on processed foods, and advances primary atopy preventive strategies.

So far over 12,000 dog owners have answered the Finnish internet-based DogRisk food frequency questionnaire. The data allows for associating many non-modifiable and modifiable risk factors with owner-reported canine atopic dermatitis (CAD) prevalence.

As partly reported previously, an increased prevalence of atopy in adult age significantly associated with the dog being from an allergy prone breed, its mother having a history of atopy, and more than 50 % of the dog's hair coat being white. But the most interesting for the owners are the things that they can have an impact on: early life diet had the strongest association with the disease.

## Novel diet-related risk factors for atopy in dogs

A non-heat-processed, meat-based maternal diet during pregnancy and as the puppies' first solid diet during the early postnatal period (at 1–2 months of age), both showed a significant 'protective' effect from atopy in adult age. The same diet also indicated protection at a later puppy stage (at 2–6 months of age), but this finding did not reach significance.

On the contrary, an ultra-processed carbohydrate based maternal diet (commercial dry kibble) during pregnancy and as the puppies' first solid diet during the early postnatal period, increased atopy incidence in adult age.

"As the differently processed diets also have a very different macro-

nutrient profile it is, at this stage, impossible to say whether it is the lack of "cooking," the minimal amount of carbohydrates, preservatives and coloring agents, the different quality and quantity of animal proteins and fats, the non-sterility of the food, or something else, that made raw foods come out as superior for atopy health in our data," says the study's main researcher Dr. Manal Hemida from the Helsinki One Health network.

Additionally, deworming the dam during pregnancy, exposing the young puppies to sun light for at least one hour per day, spending time on a dirt floor or lawn before six months of age, keeping the young puppies at normal body weight, and continuing to live in the same family where they were born, were all associated with a significant decrease of CAD risk at adult age.

"These results, however, only suggest causality, but do not prove it. A prospective diet intervention during pregnancy and at young age is needed to confirm our findings," says Adjunct Professor Anna Hielm-Björkman, leader of the DogRisk research group.

**More information:** Manal Hemida et al. Identification of modifiable pre- and postnatal dietary and environmental exposures associated with owner-reported canine atopic dermatitis in Finland using a web-based questionnaire, *PLOS ONE* (2020). DOI: 10.1371/journal.pone.0225675

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