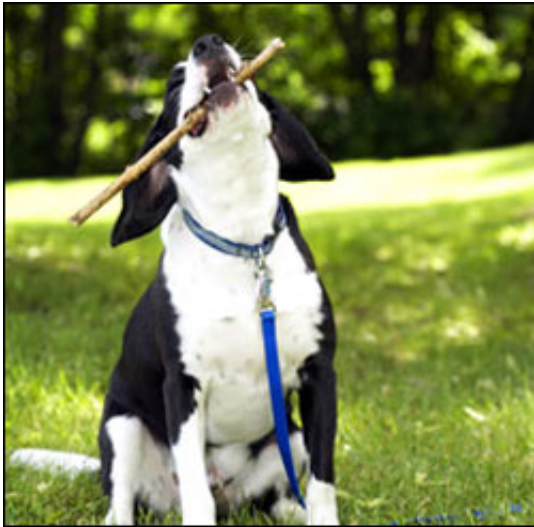


Dog study sheds new light on why dietary restriction can lead to a longer life

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Study found that dogs on a diet lived on average 1.8 years longer than those with a greater calorie intake

Changes caused to bugs in the gut by restricting calorie intake may partly explain why dietary restriction can extend lifespan, according to new analysis from a life-long project looking at the effects of dietary restriction on Labrador Retriever dogs.

Bugs in the gut are known as gut microbes and they live symbiotically in human and animal bodies, playing an important role in metabolism. Abnormalities in some types of gut microbes have recently been linked

to diseases such as diabetes and obesity.

Today's research, published in the Journal of Proteome Research, was based on a study in which 24 dogs were paired, with one dog in each pair given 25% less food than the other. Those with a restricted intake of calories lived, on average, about 1.8 years longer than those with a greater intake and they had fewer problems with diseases such as diabetes and osteoarthritis, plus an older median age for onset of late-life diseases.

The researchers, from Imperial College London, Nestlé Research Center (NRC) and Nestlé-Purina, found long-term differences in the metabolism of the dietary-restricted and non-dietary-restricted dogs. Metabolic profile plays a key role in determining animals' response to illness and their susceptibility to disease.

The scientists believe that differences in the makeup of gut microbes between the two sets of dogs could partly explain their metabolic differences. The dogs that were not on a restricted diet had increased levels of potentially unhealthy aliphatic amines in their urine. These reflect reduced levels of a nutrient that is essential for metabolising fat, known as choline, indicating the presence of a certain makeup of gut microbe in the dogs. This makeup of gut microbes has been associated in recent studies with the development of insulin resistance and obesity.

Professor Jeremy Nicholson from Imperial College London said: "This fascinating study was primarily focused on trying to find optimised nutritional regimes to keep pet animals such as dogs healthy and as long-lived as possible. However these types of life-long studies can help us understand human diseases and ageing as well, and that is the added bonus of being able to do long-term non-invasive metabolic monitoring."

The researchers suggest that part of the healthier metabolic profiles of

dogs on a restricted diet is related to their changed gut microbial activity, which in turn contributes to their generally improved health and longer lifespan. However, they also found that the overall effects of ageing on restricted and non-restricted animals exerted a greater effect on the metabolic profile than dietary restriction. This in itself is interesting as the lifelong metabolic trajectories of large animals had never been studied in this detail before and such information might be of relevance to ageing humans and their diseases. The team believes that one important outcome of this work will be the ability to improve the design of products' nutritional properties that mimic the health benefits of dietary restriction in pet dogs.

Source: Imperial College London

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