If You Avoid This Medical Mistake Yourself, Why Impose It on Your Pet?

Many health-conscious humans now avoid this common medical treatment for themselves — but fail to realize the danger it poses to their pets, leading to obesity, diabetes, and many other diseases. Protect your pet today with these safer alternatives.

Reviewed by Dr. Becker

STORY AT-A-GLANCE

- The microbiome, or microbiota, is the collection of microorganisms that lives in and on the body, and is as important to your pet's health as all his other organ systems
- Currently, research is being conducted into the connection between changes to the microbiome and many common pet diseases, including GI disease, skin and urinary tract diseases, and bacterial infections
- Other research is also ongoing into the link between antibiotics given early in life and the incidence of obesity, diabetes, and fatty liver disease in pets
- With further research to understand exactly how antibiotics given early in life affect microbiota and metabolic pathways, it may be possible in the future to develop prebiotic and probiotic therapies
- Many researchers now agree that future solutions to treating bacterial diseases should not involve new classes of antibiotics, but should focus instead on prevention and the use of prebiotics, probiotics, nanotechnology, and immunotherapy

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Most researchers agree that microbiota, much like all the organ systems of the body, is hugely important in terms of its impact on human and animal health. (In this context, microbiota, also called the "microbiome," is the collection of microorganisms that lives in and on the body.)

Microbiota serve many beneficial functions, including controlling pathogens, supporting the immune system, and producing vitamins and short chain fatty acids.

There's some exciting research being conducted into the microbiota of dogs and cats, and specifically, how it is impacted by the use of antibiotics.

Many Common Pet Diseases Are Linked to Changes in Microbiota

A nutritionist at the University of Illinois, Kelly Swanson, PhD, has spent a decade studying the way in which microbes affect the health of the body, and how changing the microbiome impacts certain types of diseases. During the course of his research, Swanson has looked at how probiotics, prebiotics and antibiotics affect the gut microbiome of dogs

and cats.

Swanson looks for patterns and relationships in conditions like obesity, diabetes, and other metabolic diseases in dogs and cats. He believes many of the conditions often seen in pets, such as oral disease, GI disease, inflammatory bowel disease (IBD), skin and urinary tract diseases, and bacterial infections, are all linked to changes in the microbiome.

One of the challenges Swanson and other researchers face is the incredible variability in the microbiomes from one animal to the next, due to factors like diet, environment, and immune system function.

Swanson believes once the relationship between the microbiome and individual health is better understood, it may be possible to act on the microbiome through diet to improve an animal's health.

Early-Life Antibiotics Trigger Obesity and Diabetes in Animals

Laura Cox, Ph.D., of New York University's Langone Medical Center, has studied the impact of early-life antibiotic therapy on body composition. Several researchers have proved that altered microbiota, which can be the result of antibiotics, can cause obesity through processes that create inflammation or change metabolic activity in the gut. These processes can result not only in obesity, but also diabetes and fatty liver disease.

According to Cox, other research suggests that antibiotics disrupt early development of microbiota. Studies involving production animals that received subtherapeutic (low dose) levels of antibiotics to promote growth show that the earlier in life the antibiotics are given, the more profound the effect.

Similar studies conducted with mice have produced an increase in fat mass. Cox's studies have shown that exposure to antibiotics in early infancy changes the composition of the microbiota, leaving it more vulnerable to disruption. In the mice studies, the animals not only gained weight, they also accumulated more visceral and liver fat.

These results show a clear link between antibiotics and changes in metabolic pathways, and further research shows that a high-fat diet exacerbates the problem, and also that changes in the metabolic pathways remain throughout life.

In addition to demonstrating that antibiotics early in life cause alterations in microbiota that result in changes in body composition, Cox has also proven that the microbes alone can trigger fat accumulation. In fact, germ-free mice that were administered microbiota from antibiotic-treated mice gained more weight and fat than mice that received microbiota from control mice.[1]

Treating Bacterial Disease Without Antibiotics

Cox is now investigating specific bacteria and their role in microbiome development and obesity.

With further research to understand exactly how antibiotics given early in life affect microbiota and metabolic pathways, it may be possible in the future to develop prebiotic and probiotic therapies. Better still would be a much more conservative approach to antibiotic use in both humans and animals.

It's encouraging to know that many researchers no longer believe the solution to treating bacterial diseases is new classes of antibiotics, but rather prevention of disease using prebiotics, probiotics, nanotechnology, immunotherapies, and other agents.

Sources and References

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[1] Cell, Volume 158, Issue 4, pp. 705-721, August 14, 2014