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Dog Tips

Addressing Pet Obesity With Probiotic Interventions

Scientists have discovered specific probiotic strains that significantly reduce body fat in dogs, opening the door to new treatments for pet obesity.

Analysis by Dr. Karen Shaw Becker

STORY AT-A-GLANCE

- A recent study by researchers at Seoul National University in Korea revealed that two particular strains of probiotics (Bifidobacterium and Enterococcus) contribute to weight loss in obese dogs
- The probiotic strains demonstrated remarkable success in reducing the body fat percentage in dogs, even while eating a high-fat diet
- The researchers observed a decrease in the dogs' body weight, alleviation of subcutaneous fat accumulation and an increase in energy metabolism, which confirmed a shift in metabolic orientation toward fat consumption, rather than fat accumulation
- A 2020 study showed that a range of factors influence body condition scores in dogs, including four in particular: diet, exercise, probiotic supplementation, and treat quantity
- The 2020 study results indicate that a diet of fresh food, probiotic supplementation, and feeding treats at or under 10% of total daily calories are significant factors in helping dogs maintain an ideal weight

In 2022, in the U.S. alone, 59% of dogs and 61% of cats were overweight or obese.[1] A recent study published in Microbiology Spectrum, a journal of the American Society for Microbiology, reveals that researchers at Seoul National University in Korea have identified two strains of probiotics that contribute to weight loss in obese dogs.[2] The purpose of the study was to investigate metabolic diseases in companion animals toward identifying probiotics that may show promise as a long-term, safe treatment.

> *"The initial challenge involved selecting specific metabolic diseases for examination, leading us to focus on the prevalent issue of 'obesity in pets'," study principal investigator Younghoon Kim, Ph.D., professor in the Department of Agricultural Biotechnology, College of Agriculture and Life Science (CALS) stated in an American Society for Microbiology (ASM) press release.[3]*

Globally, obesity is higher in older pets and is estimated to affect about 50% of the total pet population across all age groups. According to the researchers, a significant portion of these pets is already undergoing treatments, including dietary interventions.

> *"Given this context, our team initiated experiments with the primary goal of identifying probiotics capable of reducing the body fat percentage in pets," Kim said.*

According to the ASM press release, “one of Kim's primary objectives is to raise awareness about the pressing need for further research on probiotics tailored for pets, emphasizing the vast array of probiotic types that hold potential applications.” Kim believes probiotics present broad therapeutic possibilities for treating a wide spectrum of diseases among companion animals.

> *“By promoting this awareness, my aspiration is to catalyze increased attention, funding and collaborative efforts in the scientific community to explore the expansive landscape of probiotic applications in pet health,” says Kim.*

Select Probiotic Strains Activate Energy Metabolism

Kim’s team analyzed variations in the intestinal microbiota of young vs. old dogs, which revealed a decline in the population of lactic acid bacteria, specifically Bifidobacterium species and Enterococcus species, in the older dogs. Based on their findings, the researchers decided to investigate these two strains.

In the experimental phase, Enterococcus faecium IDCC 2102 and Bifidobacterium lactis IDCC 4301, along with a high-fat diet, were fed to a group of obese Beagles, with the result that the dogs had a reduction in body fat, and a resolution of imbalances in their intestinal microflora caused by obesity.

According to Kim, the probiotic strains they selected “demonstrated remarkable success in reducing the body fat percentage in dogs.”

> *“What set these strains apart was their ability to not only limit dietary intake or enhance excretion to reduce body weight but, more importantly, activate energy metabolism,” Kim explained. “Even when exposed to a high-calorie diet, we observed a decrease in body weight, alleviation of subcutaneous fat accumulation and an increase in energy metabolism. This confirmed a shift in the body's metabolic orientation toward fat consumption, rather than fat accumulation.”*

Body fat accumulation often leads to systemic inflammation and disruption of hormone metabolism. Kim’s study revealed that the dogs fed the selected probiotic strains had lowered inflammation levels and enhanced metabolic activities such as insulin production. In addition, “the researchers successfully increased the proportion of commensal bacteria, which typically reside in the body, acting as a defense against harmful bacteria and boosting immunity.”

Research on Probiotics for Pets Remains ‘Notably Inadequate’

Even better is the fact that these changes aren’t temporary. The positive outcomes the researchers observed are maintained over time, demonstrating the potential long-term benefits of including the probiotic strains into the health regimens of companion animals.

The ASM press release notes that “research on tailored probiotics for all companion animals, including the dogs investigated in this study, remains notably inadequate when compared to research on humans.”

> *“While types of probiotics suitable for human consumption or commercial livestock have been identified and established, the absence of standardized guidelines for companion animals is a glaring gap,” said Kim. “Our study aimed to address this deficiency by striving to broaden the spectrum of probiotics applicable to pets across various environments.”*

Probiotics Among Top 4 Factors Influencing Dog Obesity

In 2020, fresh pet food company **NomNomNow** conducted a study that looked at risk factors associated with overweight and obese dogs.[4] The categories of fresh pet food used for the study included commercial fresh food, commercial frozen food, and home-cooked food, typically characterized by the usage of gently cooked or minimally processed whole food ingredients.

The researchers collected body condition scores and demographic, diet and lifestyle data on 4,446 dogs. Owners of 1,480 dogs (33%) reported their pets were overweight or obese; 356 of that group (8% of the 4,446) were determined to be obese. Of the 4,446 dogs, 22% were fed fresh food only; another 17% were fed fresh food in combination with other types of food.

The goal of the study was to evaluate the influence of a wide range of factors on overweightness/obesity, and obesity alone in dogs. The results showed that eight factors are significantly associated with both overweightness/obesity and obesity alone: diet composition, probiotic supplementation, treat quantity, exercise, age, food motivation level, pet appetite, and neutering. Of the eight factors, four were especially significant according to the study results:

- **Diet —** Since dogs fed a fresh food only diet comprised the largest category (besides "Other"), the researchers used this as the reference level in their logistic regression. Relative to fresh fed dogs, those fed dry plus canned, dry only, and dry plus fresh were more likely to be overweight or obese; dry plus canned and dry only, but not dry plus fresh food, were associated with obese only dogs. Dogs fed **raw food** only were less likely to be overweight/obese, but there was no effect on obesity alone.
- **Exercise —** Predictably, the researchers found that gradually increasing a dog's amount of exercise per week decreased the likelihood of both overweightness/obesity and obesity alone.
- **Probiotic supplementation (NomNomNow also makes a pet probiotic) —** A total of 844 dogs in the study were taking a broad range of commercial **probiotic supplements**, and the results showed those dogs were more likely to be at an ideal weight. To further validate this finding, the researchers repeated their analysis using only healthy dogs, since dogs receiving probiotics are more likely to have a medical condition resulting in a lower weight, and the results were the same.

  Finally, the research team performed a similar analysis with other supplements including prebiotics, multivitamins, CBD oil, fish oil, herbal supplements, and immune support, and found that none of those supplements appeared to have a significant relationship with either the overweight and obese group of dogs or the obese only dogs.
- **Treat quantity —** The researchers examined the association between treat intake (by percentage of caloric needs being met by treats) and the dogs' weight and discovered that while giving over 10% of a dog's diet in treats was associated with overweightness/obesity, there was no significant difference between giving less than 10% and giving no treats at all. They concluded that giving treats in moderation is not a risk factor for either overweightness or obesity.

Fresh Food, Probiotics and Treat Restriction

In the Discussion section of the study, the authors explain that one novel finding is the association between overweightness/obesity in dogs and dry diets, a result that has in the past been (scientifically) observed in cats, but not in dogs.

> *"Specifically," the research team writes, "we found that, compared to fresh food, dry food is significantly associated with overweightness/obesity, both alone and in combination with canned or fresh food. Furthermore, dry food only diets and dry plus canned combination diets were significantly associated with obesity, but not dry plus fresh combination diets. This may indicate that supplementing with other types of food ameliorates the more obesogenic consequences of certain diets."*

Regarding the relationship between probiotic supplementation and dogs' body weight, the authors observe:

> *"... to the best of our knowledge this is the first large cross-sectional demographic study that has specifically identified probiotic supplementation as a potential protective factor with regard to overweightness and obesity. The mechanisms behind this relationship are unclear, but in addition to modulating energy harvest and nutrient absorption through alterations in microbiota, probiotics might act through improving insulin sensitivity ... or increasing satiety ... Additional prospective data should be collected to identify whether there is a causal relationship."*

The study authors identify treat feeding practices as "robust predictors of body condition [weight]":

> *"In contrast to previous studies which identify even a moderate frequency of treat-feeding as a risk factor ... we find that feeding treats in moderation, i.e. with 10% or less of total caloric needs being met by treats, is neither associated with overweightness/obesity nor obesity. This discordance between findings may be due to differential effects of treat quantity and treat frequency. However, these results should be interpreted cautiously as owner assessment of calories provided by a given treat may often be imprecise."*

For information on how to keep your pet at a healthy weight, check the dos and don'ts list in my article **One of the Greatest Health Threats to Your Pet**.

Sources and References

[1] Association of Pet Obesity Prevention, 2022 Pet Obesity Prevalence Survey

[2] Kang, A. et al. Microbiology Spectrum, Vol. 12, No. 3, Veterinary Microbiology Research Article, January 15, 2024

[3] American Society for Microbiology Press Release, January 25, 2024

[4] Perry, L.M. et al. Risk factors associated with canine overweightness and obesity in an owner-reported survey. bioRxiv, January 7, 2020