Microbiome-Centric Approach to Diarrhea

The gut microbiome plays critical roles in digestion, nutrient absorption, and host health.

Maintaining or restoring the health of the gut microbiome can help prevent and manage many gastrointestinal disorders.

Putting microbiome science into practice for gastrointestinal health

Probiotics can mitigate antimicrobial effects on the gut microbiome

The science

Antibiotics such as metronidazole and amoxicillin-clavulanate alter the microbiome, and these changes may persist after discontinuation of the antibiotics.[1,2]

The administration of the probiotic strain *E. faecium* SF68 in combination with a therapeutic diet specifically formulated for intestinal disorders improved diarrhea after 14 days in dogs with clinical signs consistent with small intestinal bacterial overgrowth or antibiotic-responsive diarrhea, compared to the therapeutic diet alone.[5]

The probiotic strain *Enterococcus faecium* SF68 is unaffected by metronidazole, an antibiotic commonly used to treat dogs with diarrhea.[6]

Supplementation with *E. faecium* SF68 during the administration of amoxicillin-clavulanate to cats resulted in fewer cats developing severe diarrhea, improved fecal consistency, and lower total diarrhea score compared to cats administered a placebo.[2]

Use of a synbiotic (*Enterococcus faecium* SF68 and psyllium) reduces the severity of diarrhea and may decrease time to resolution for feline diarrhea associated with the administration of amoxicillin-clavulanate.[7]

Putting the science into practice

Antibiotics such as metronidazole and amoxicillin-clavulanate can have long-lasting, negative impacts on the microbiome, and their use should be avoided unless necessary and with the principles of antimicrobial stewardship in mind.[3,4]

For dogs with clinical signs consistent with antibiotic-responsive diarrhea or small intestinal bacterial overgrowth, the probiotic *E. faecium* SF68 combined with a therapeutic diet improves diarrhea without the administration of antibiotics. Consider trying this approach before administering antimicrobials to these cases.

Metronidazole does not inactivate the probiotic *E. faecium* SF68, making the probiotic suitable for co-administration. When administering amoxicillin-clavulanate to cats, the administration of *E. faecium* SF68 or a synbiotic (*E. faecium* SF68 and psyllium) helps mitigate diarrhea.

Probiotic can reduce flatulence

The science

Supplementation of dogs' diets with *E. faecium* SF68 significantly reduced the number of flatus events/emissions and the maximum amount of hydrogen sulfide released.[8]

Putting the science into practice

When a client complains about their dog's flatulence, consider administering a course of *E. faecium* SF68 to reduce frequency and malodor.

Probiotic can reduce diarrhea in kittens

The science

Supplementation with the probiotic strain *E. faecium* SF68 was associated with lower incidence and duration of naturally occurring diarrhea, higher serum IgA antibody levels in kittens.[9]

Putting the science into practice

Administering the probiotic *E. faecium* SF68 can reduce diarrhea in kittens.

Prebiotics enhance gut health

The science

The inclusion of chicory in dogs' diets increased *Bifidobacterium* species and improved digestibility of the diet. The response was variable, with some dogs responding within 7 days but others requiring 21 days.[10]

Dogs fed chicory or fructooligosaccharides (FOS) had significantly more fecal Bifidobacteria, fewer fecal Clostridia, and increased levels of beneficial short-chain fatty acids.[11]

Supplementing senior dogs' diets with prebiotics (inulin, mannan-oligosaccharide alone or in combination) improved fecal scores and produced beneficial shifts in the microbiome.[12]

Putting the science into practice

Prebiotics (such as inulin and fructooligosaccharide) can improve microbiome balance and food digestibility and increase the production of beneficial short-chain fatty acids. Allow at least 3 weeks to determine efficacy of the dietary change.

Probiotic enhances microbiome balance

The science

Dogs fed a dry diet supplemented with the probiotic *Bacillus coagulans* GBI-30 6086 (BC30) increased fecal microbial diversity and richness compared to placebo-fed dogs, and maintained a negative dysbiosis index consistent with a healthy microbiome.[13]

Cats fed a dry diet supplemented with the probiotic *Bacillus coagulans* GBI-30 6086 (BC30) showed increased fecal microbial diversity consistent with a balanced fecal microbiome.[13]

Putting the science into practice

Dry diets supplemented with the heat-stabile probiotic *Bacillus coagulans* GBI-30 6086 (BC30) can improve microbial balance in the gut microbiome.

Probiotic and synbiotic address diarrhea in adult dogs and cats

The science

The administration of *E. faecium* SF68 suggested an enhanced treatment effect compared to metronidazole alone. Dogs on dual therapy had significantly greater percentages of days with normal stool; a numerically higher percentage of dogs with normal stool on Day 7; and numerically lower diarrhea severity scores on Days 5-7.[6]

Use of a synbiotic resulted in a presumed beneficial effect on the dogs' microbiome and a decrease in the prevalence of diarrhea in training sled dogs. Fewer days of diarrhea were observed when a presumed contagious outbreak of diarrhea was observed in the dogs supplemented with the synbiotic during Week 5 of treatment, further suggesting a beneficial effect.[14]

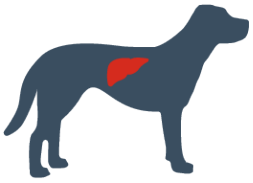
Shelter cats supplemented with *E. faecium* SF68 had fewer episodes of diarrhea of 2 or more days' duration when compared to placebo-fed cats.[15]

Putting the science into practice

When metronidazole is administered, providing the probiotic *E. faecium* SF68 can enhance the treatment effect.

Synbiotics may reduce the prevalence and duration of diarrhea – including contagious diarrhea – in dogs.

The probiotic *E. faecium* SF68 can reduce the duration of diarrhea in cats.



Probiotic safe for use in dogs with liver disease

The science

Short-term administration of the probiotic strain *E. faecium* SF68 did not alter the levels of two primary liver enzymes and did not produce clinically relevant changes in cholesterol or triglyceride concentrations. This indicates the probiotic would not affect levels of these enzymes when administered to dogs with liver disease, and may be the probiotic of choice in dogs with liver disease.[16]

Putting the science into practice

The probiotic *E. faecium* SF68 does not alter liver enzymes, cholesterol or triglycerides, making it safe for use in dogs with liver disease.

Probiotics offer benefits for shelter medicine

The science

The administration of *E. faecium* SF68 suggested an enhanced treatment effect compared to metronidazole alone. Shelter dogs on dual therapy had significantly greater percentages of days with normal stool; a numerically higher percentage of dogs with normal stool on Day 7; and numerically lower diarrhea severity scores on Days 5-7.[6]

Shelter cats supplemented with *E. faecium* SF68 had fewer episodes of diarrhea of 2 or more days' duration when compared to placebo-fed cats. The percentage of cats with diarrhea was significantly lower in the SF68 group compared to the placebo group (7.7% vs 20.7%, respectively). Decreasing the prevalence of diarrhea could indirectly save shelters time and money, as well as improve animal welfare and likelihood of finding a home.[15]

Shelter cats supplemented with the probiotic *Bacillus coagulans* GBI-30 6086 (BC30) showed a significant decrease in diarrhea and an improvement in fecal scores.[13]

Putting the science into practice

Administration of the probiotic *E. faecium* SF68 can reduce the prevalence and duration of diarrhea in shelters. Decreasing the prevalence of diarrhea and shortening treatment times could indirectly save shelters time and money, as well as improve animal welfare and likelihood of finding a home.

MICROBIOME-CENTRIC APPROACH TO BRAIN HEALTH

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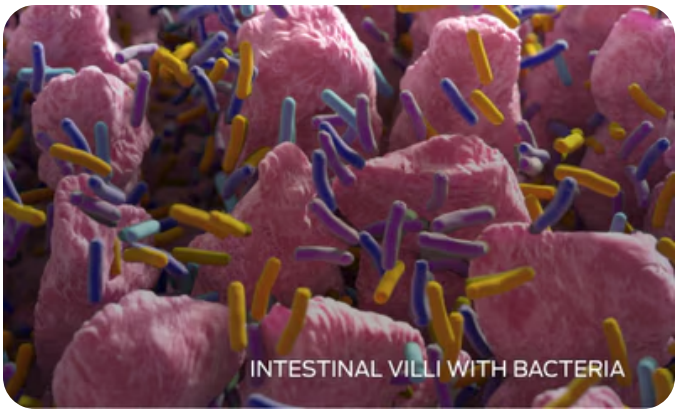

Microbiome Fundamentals

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