

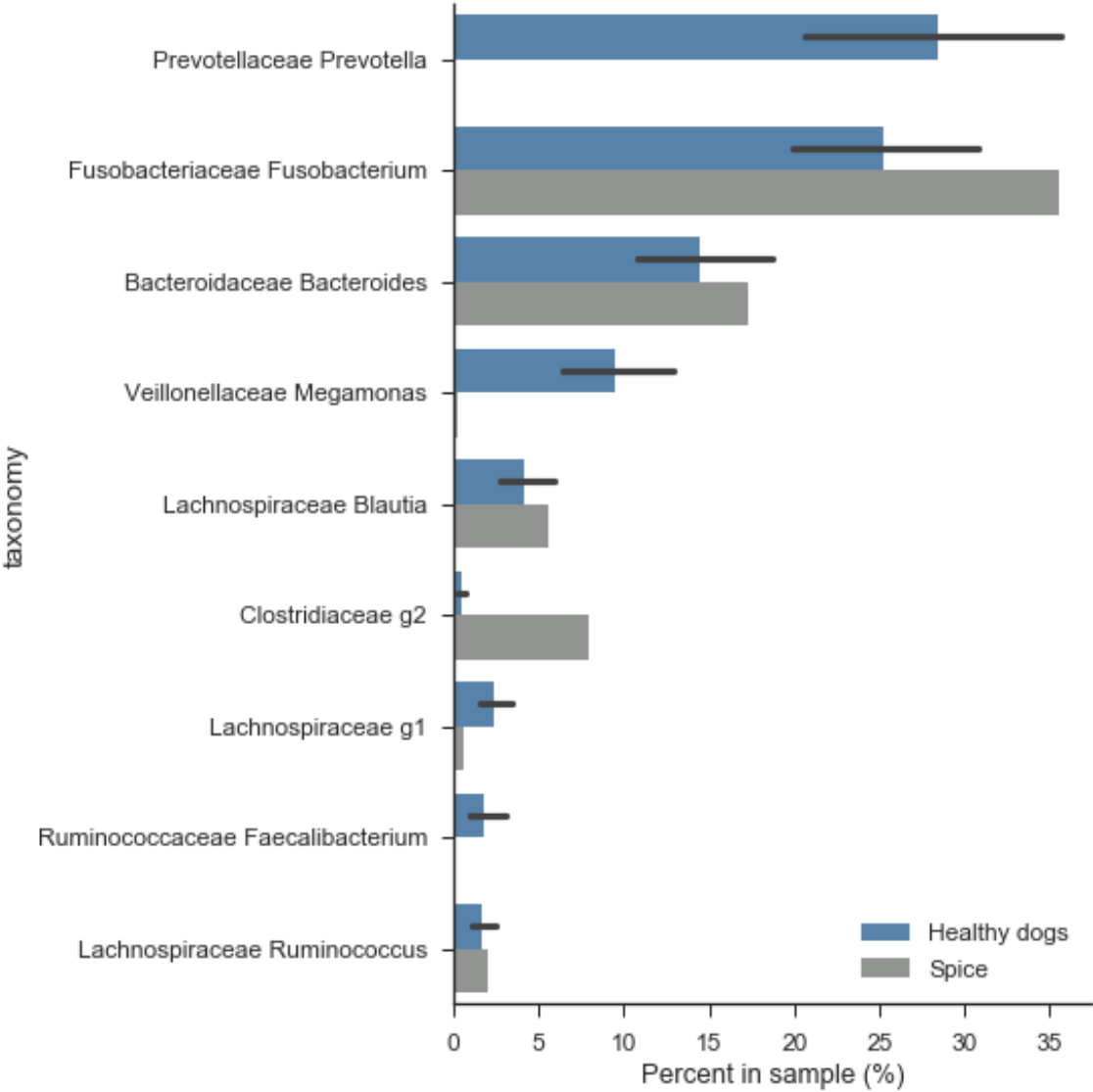
HELLO! HERE IS  
**SPICE'S**  
**MICROBIAL ANALYSIS**

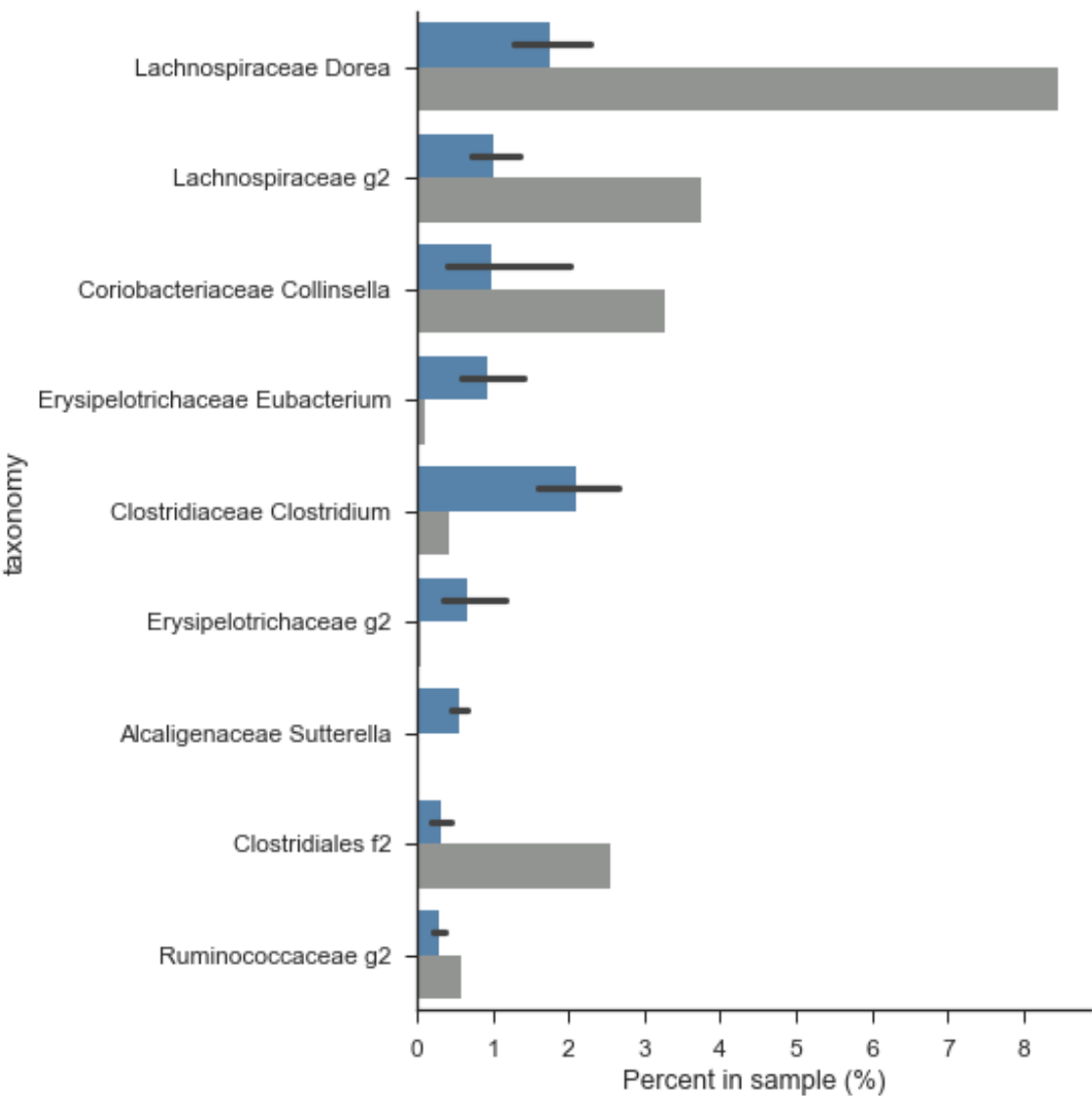


animalbiome  
know your pet – inside and out!

## Healthy dogs compared with Spice

Below are a series of figures that show how Spice's profile compares with healthy dogs in our database. It is organized by the most abundant bacteria in healthy dogs and the blue bars represent average values for healthy dogs. Following the figures is a table that describes some of the most common bacteria found in healthy dogs.





## The top ten bacteria found in Spice's sample

	taxonomy	percent
0	Fusobacteriaceae Fusobacterium	35.58
1	Bacteroidaceae Bacteroides	17.28
2	Lachnospiraceae Dorea	8.46
3	Clostridiaceae g2	7.96
4	Lachnospiraceae Blautia	5.54
5	Erysipelotrichaceae Allobaculum	4.08
6	Lachnospiraceae g2	3.74
7	Coriobacteriaceae Collinsella	3.28
8	Clostridiales f2	2.54
9	Paraprevotellaceae Prevotella	2.5



## Healthy dogs compared with Spice

This table contains information about the common bacteria found in over 75% of healthy animals.

	Bacterial group	Spice	mean for healthy dogs	high end of range for healthy dogs	percent of healthy dogs	About this bacteria
0	Alcaligenaceae Sutterella	0	0.48	0.9	84.5	Alcaligenaceae Sutterella is a genus of bacteria that is normally found in the gastrointestinal tract of dogs. They are mildly pro-inflammatory, though the results of several studies have indicated that they are unlikely to play a significant role in the development of GI conditions like Inflammatory Bowel Disease. Instead, members of this genus may help keep immune system responses at an appropriate level. At the same time, higher levels of Sutterella are associated with a host of issues including diarrhea and food sensitivities, so moderation is key with this genus.
1	Bacteroidaceae Bacteroides	17.28	14.25	29.23	96.6	Bacteroidaceae Bacteroides is a genus of bacteria found in the gut of healthy dogs. One important role this group plays is preventing harmful microbes from growing in the gut: they do this by taking up resources that, if left unutilized, would provide a breeding ground for disease-causing pathogens. In addition, they actively secrete compounds that help make the gut environment more hospitable to themselves and other helpful bacteria. Bacteroides is also responsible for converting complex carbohydrates into compounds more easily utilized by the host organism.
2	Clostridiaceae Clostridium	0.42	0.69	2.53	77.6	It is thought that the Clostridium genus plays an important role in the maintenance of host gastrointestinal health. In dogs, several species belonging to the Clostridium genus have been linked with high-protein, low-carbohydrate diets, which is the diet recommended for healthy weight loss. However, some species of Clostridium, such as Clostridium perfringens, have been known to be pathogenic.
3	Clostridiaceae g2	7.96	2.01	4.11	96.6	Clostridiaceae is a family of bacteria which plays an important role in the breakdown of proteins within the gastrointestinal tract. Members of this family also help prevent the spread of cancer: when colon cancer cells are exposed to dead Clostridiaceae bacteria, they quickly die. Researchers believe that proteins on the surface of the Clostridiaceae cells are responsible for their anti-cancer effects.
4	Clostridiales f2	2.54	0.27	0.78	87.9	Clostridiales is an order of bacteria whose presence is key to maintaining a healthy gut microbiome. The group plays a crucial role in preventing a condition commonly called leaky gut syndrome, which occurs when the cells lining the intestinal tract too readily allow pathogens to enter the bloodstream, often prompting excessive inflammation. The presence of Clostridiales within the intestinal tract makes the host organism less vulnerable to developing food sensitivities and allergies. Some evidence even suggests that if an allergic individual who is lacking in Clostridiales receives adequate Clostridiales supplementation, the allergic reaction will decrease in severity or even disappear completely.
5	Coriobacteriaceae Collinsella	3.28	0.91	3.97	91.4	Coriobacteriaceae Collinsella is a genus within the Actinobacteria phylum. Bacteria belonging to this phylum play crucial roles in detoxifying poisons, protecting against pathogens, and converting food into products that can be more easily utilized by the host. However, an overgrowth of the Collinsella genus in particular can be problematic: elevated levels of Collinsella have been associated with diarrhea and Inflammatory Bowel Disease (IBD).

	Bacterial group	Spice	mean for healthy dogs	high end of range for healthy dogs	percent of healthy dogs	About this bacteria
6	Erysipelotrichaceae Eubacterium	0.1	0.89	2.34	94.8	Erysipelotrichaceae Eubacterium is a genus of bacteria that tends to be more abundant in individuals who consume a high-fat diet. Additionally, those who regularly engage in physical activity have been shown to have significantly lower levels of this group when compared to those who are sedentary. Though Erysipelotrichaceae Eubacteria have been associated with pathologies such as colorectal cancer, they are present in a large percentage of dogs, so their mere presence is not cause for concern.
7	Erysipelotrichaceae g2	0.06	0.62	2.2	91.4	High levels of Erysipelotrichaceae have been associated with metabolic disorders, such as hyperthyroidism, hypothyroidism, Cushing's syndrome, and diabetes. Erysipelotrichaceae levels also tend to be elevated in individuals with colorectal cancer. At the same time, it is perfectly normal for Erysipelotrichaceae to be present in the canine gastrointestinal tract, and its mere presence is no cause for alarm. Dogs who consume particularly high-quality food, especially raw food, may have higher levels of this Erysipelotrichaceae despite having no gastrointestinal issues whatsoever. This is thought to be due to these dogs' systems having access to proteins higher in bioavailability.
8	Fusobacteriaceae Fusobacterium	35.58	24.35	46.5	94.8	Fusobacteriaceae Fusobacterium is normally found in the canine gastrointestinal tract, though it is highly likely to cause disease if it gains access to the bloodstream. Elevated levels of this genus are increasingly being associated with a number of chronic diseases, including Inflammatory Bowel Disease (IBD). Some studies have even identified individual species of Fusobacterium that have the potential to serve as biomarkers for the disease, meaning that the mere presence of these species could identify IBD-affected individuals. However, some members of the Fusobacterium genus are not necessarily indicative of gastrointestinal malaise; researchers have shown that Fusobacteria levels are higher in dogs fed raw meat compared to dogs fed kibble.
9	Lachnospiraceae Blautia	5.54	4.1	10.19	98.3	Lachnospiraceae Blautia is a family of bacteria that is commonly found in the canine gut. One of its primary functions is producing butyric acid, a strong-smelling acid that is used for cell processes throughout the body. Importantly for digestive health, recent studies have indicated that butyric acid can be used as a therapy for Irritable Bowel Syndrome (IBS). It has anti-inflammatory properties and also makes the gut environment less tolerable to pathogenic bacteria.
10	Lachnospiraceae Dorea	8.46	1.76	3.73	98.3	Lachnospiraceae Dorea is a genus of bacteria whose members are known to be major gas producers, mainly carbon dioxide and hydrogen gas. Though this genus is often found in healthy individuals, when present in elevated numbers there is a greater likelihood of constipation. Elevated levels are also more common in individuals with Multiple Sclerosis, an autoimmune condition, suggesting that the Lachnospiraceae Dorea genus may play a role in immune system activity.
11	Lachnospiraceae Ruminococcus	2.04	1.68	4.53	98.3	Ruminococcus is a genus of bacteria normally found in the canine intestinal tract. Bacteria belonging to the Ruminococcus genus are able to easily break down cellulose, an important carbohydrate found in plant cell walls. Carnivores lack the powerful digestive enzymes necessary to break down cellulose, so the presence of Ruminococcus allows them to obtain energy from this ubiquitous compound. When Ruminococcus digests cellulose, it produces succinate and acetate, two short-chain fatty acids which have been shown to have potent anti-inflammatory effects.

	Bacterial group	Spice	mean for healthy dogs	high end of range for healthy dogs	percent of healthy dogs	About this bacteria
12	Lachnospiraceae g1	0.54	2.31	5.93	98.3	Lachnospiraceae is a family of bacteria normally found in a healthy canine gut. One of its primary functions is to produce butyric acid, which has anti-inflammatory properties and also makes the environment less tolerable to harmful species of bacteria. Higher levels of Lachnospiraceae have been associated with decreased risk of some types of cancer. This group is especially vulnerable to antibiotics, so it tends to be deficient or even absent in dogs who have recently undergone antibiotic treatment.
13	Lachnospiraceae g2	3.74	1.08	2.29	98.3	Lachnospiraceae is a family of bacteria normally found in a healthy canine gut. One of its primary functions is to produce butyric acid, which has anti-inflammatory properties and also makes the environment less tolerable to harmful species of bacteria. Higher levels of Lachnospiraceae have been associated with decreased risk of some types of cancer. This group is especially vulnerable to antibiotics, so it tends to be deficient or even absent in dogs who have recently undergone antibiotic treatment.
14	Prevotellaceae Prevotella	0	23.44	50.72	84.5	Prevotellaceae Prevotella is a genus of bacteria commonly found in the digestive tract of healthy dogs. The presence of Prevotella has been shown to promote more efficient processing of glucose, a critical energy source for all body cells. However, studies have linked an overabundance of this group with excessive inflammation; for this reason, researchers suspect it may play a role in chronic inflammatory diseases like IBD. Individuals consuming diets high in carbohydrates tend to have higher levels of Prevotella, so if your dog shows an overabundance of this group and eats grains, fruits, or vegetables on a regular basis, you may consider decreasing or eliminating them from the diet.
15	Ruminococcaceae Faecalibacterium	0	1.46	5.04	77.6	Ruminococcaceae Faecalibacterium is a genus of bacteria which exerts largely positive effects on the canine host. One group of researchers refers to this group as a health-promoting genus, as it has been found to be more abundant in the guts of individuals who lead more active lifestyles. Excessively low levels of Faecalibacterium in the canine gut is associated with lymphoma as well as Crohn's disease. However, raw-fed dogs have also been shown to have much lower levels of Faecalibacterium in the stool compared to kibble-fed dogs, so if your dog eats raw food and has low levels of Faecalibacterium, that is one possible explanation.
16	Ruminococcaceae g2	0.58	0.26	0.54	89.7	Ruminococcaceae is a family of bacteria which is often present in the canine gastrointestinal tract. Several of this group's metabolic byproducts decrease the permeability of the cells lining the intestine, which reduces the incidence of disease for the host. More permeable intestines tend to cause health issues because pathogens ingested by the host have easier access to the bloodstream, where they can cause issues throughout the body.
17	Veillonellaceae Megamonas	0.2	8.33	19.88	82.8	Veillonellaceae Megamonas is a genus of bacteria normally found in the gut of healthy dogs. One of the major metabolic products of this group is a compound called propionate, which has been shown to possess potent anti-inflammatory properties. In addition to its ability to inhibit inflammation, Megamonas affects the metabolic rate of the host organism. When researchers drastically restricted the caloric intake of a dozen dogs, the dogs who lost the most weight had significantly lower levels of Megamonas. Dogs with more Megamonas in their gut were better able to maintain their weights despite receiving insufficient food.