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# Clinician's Forum

Expert views from a roundtable discussion on fiber supplementation

## The Clinical Impact of Fiber on Patient Health

Fiber offers numerous health benefits throughout the body, having the most direct impact on GI health. It physically modulates stool, serves as a microbial energy source through fermentation, and alters GI transit time. For veterinary practitioners, effectively harnessing the power of fiber begins with a basic understanding of fiber types, careful case selection, and an awareness of the available fiber supplementation options.

### **Dr. Molleson: What is fiber, and why is it so important?**

**Dr. Parker:** Fiber is a nondigestible carbohydrate that is commonly included in pet foods. It is not a required nutrient, but it has nutritional benefits, with effects on gut health and stool quality. It can also help in the management of GI signs, from diarrhea and constipation to vomiting in cats with hairballs.

**Dr. Tolbert:** Fiber has been known to be important to gut health in large animals for some time, but we've been slow to catch on in small animal medicine. It's become more of a hot topic in small animal medicine recently mostly because we're learning more about the microbiome. We know the positive impact that healthy gut bacteria have on overall gut health, and we know that we have to feed these bacteria well to keep them balanced. One of the ways we feed them is with fiber.

### **Dr. Molleson: How should we think about the different types of fiber and characteristics of fiber?**

**Dr. Rollins:** When it comes to classifying fiber and its clinical applicability, it can be beneficial to classify fiber based on solubility and fermentability. Soluble fiber binds water,

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making a thick, viscous gel. This slows absorption, which, for example, may be helpful for a diabetic patient. Insoluble fiber adds bulk to the feces, which can help in other situations like constipation. Although this can vary by specific fiber, soluble fibers are generally more fermentable than insoluble fiber, which supports healthy intestinal cells. Understanding the basic properties of how fiber types differ can give the clinician more power to make the best fiber selection.

**Dr. Parker:** And it rarely comes down to one fiber type always being the answer for every patient. We often need to trial different types of fiber with different properties that have different actions in the GI tract.

**Dr. Tolbert:** When people try a fiber source and it doesn't work or it causes issues, they often don't think it could be the type or amount of fiber. For example, just because psyllium didn't work with one patient doesn't mean cellulose or a mixed fiber source wouldn't have worked. And like fiber-enriched diets, fiber supplements can be quite different from each

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**—Dr. Rollins**

## Key Takeaways

- Fiber can be broadly classified based on solubility in water and fermentability by gut microbes; its functional properties (fermentability and ability to bind water) provide a range of benefits. Providing a balanced blend of soluble and insoluble fibers with a range of fermentability is often recommended.
- Although fiber is most notably effective in the management of large-bowel diarrhea, it can be used in an array of clinical scenarios to impact patient health.
- Recent research supports the use of fiber supplementation over metronidazole in cases of acute noninfectious diarrhea in dogs.
- Provable® Fiber Supplement offers veterinary practitioners a titratable way to add a blend of fiber to a patient's diet.

other in terms of the amount of fiber and fiber sources. That is a critical point we need to get across to practitioners; you must be able to evaluate what the diet is, what the response was, why you think that happened, and if you could try fiber in a different way.

**Dr. Ng:** From a general practitioner standpoint, my practical understanding of fiber is that difference between soluble, insoluble, and mixed fiber sources. Back in the day, all I really thought about was canned pumpkin being added in as an essential fiber source. It's important for general practitioners to know that there's so much information regarding fiber, including solubility and fermentability; there's more than just one source, and each source can have different effects.

### **Dr. Molleson: What role does fiber play in the gut? What impact does it have on the GI microbiome?**

**Dr. Tolbert:** If we keep our gut bacteria balanced and healthy, our gut is going to be healthier, and fiber plays a critical role. Fermentable fiber is largely undigested and unabsorbed by the host, leaving it available for fermentation by the lactic acid-producing bacteria in the gut, which results in the formation of short-chain fatty acids. We know short-chain fatty acids increase mucosal blood flow and serve as an energy source for colonocytes. They also help to boost the immune system, and they are potentially antineoplastic; we could go on and on about the benefits of what microbes produce as a result of those fermentable fibers.

**Dr. Parker:** Short-chain fatty acids are critical energy sources. They can act both locally at the gut level, as well as systemically, affecting the gut-brain axis, gut-kidney axis, and gut-lung axis. They can also affect endocrine function and insulin resistance. The gut is the most important organ in the body because of its impact on other organs, and the short-chain fatty acids that are produced play an important role in the communication between the gut and the rest of the body.

**Dr. Tolbert:** Nonfermentable fibers also change the microbiome. Psyllium is a soluble, viscous—but largely nonfermentable—fiber. It influences the microbiome, but the question is how? If it's a nonfermentable fiber, bacteria are not really using it, so why is it changing the microbiome and making it healthier? Because it is doing other things. It's changing the environment, making it more favorable for those good, healthy bacteria to survive. Things like just minimally changing the fecal water content, sodium chloride excretion, et cetera, can have a critical impact on the microbiome. So, although we are talking a lot about fermentable fibers and the important role they play on gut health, we know that those nonfermentable and soluble fibers also play a big role in gut health as well.

**Dr. Molleson:** What do the terms prebiotic, probiotic, and synbiotic mean? How do you go about deciding which is going to be the best option for a patient?

**Dr. Parker:** There are specific criteria for these definitions. Probiotics are live microorganisms that confer health benefits when administered in adequate amounts; they are typically bacterial in nature, but yeast probiotics have become a little more popular in veterinary medicine. You are giving a certain quantity of, typically live, microorganisms that are going to help reestablish the gut balance. Prebiotics are non-digestible food sources for the beneficial gut microorganisms, and they act similarly to soluble fibers. They are often fermented to affect the gut microbiome and are often included in pet foods, but they can also be supplemented. Examples would include inulin, fructooligosaccharides, and chicory. Synbiotics are products that include both a probiotic and a prebiotic and are classified as either complementary or synergistic. And the newest term to add to this list is postbiotic. Postbiotics are the compounds produced by the breakdown of prebiotics and probiotics in the gut. Short-chain fatty acids are the most commonly discussed postbiotic, and they can have many beneficial effects in the gut and systemically. I rarely prescribe probiotics because I do so many chronic enteropathy consults and many are already on probiotics and still have clinical signs of diarrhea, so I don't feel that probiotics alone often make a big difference in these chronic enteropathy patients. I haven't used *Saccharomyces boulardii* much as a yeast-based probiotic, but that is an emerging option. I reach for a probiotic more in cases of acute dysbiosis, like suspected antibiotic-induced dysbiosis, or in cases of acute diarrhea. If a patient comes in with acute diarrhea and they need to leave the clinic with something, I typically give them a fiber supplement, whether that be in the food or supplementally to the food. At The Ohio State, our ER regularly sends home fiber for acute diarrhea cases. We don't send home metronidazole or antibiotics here; we send them home with fiber.

**Dr. Rollins:** I have had similar experiences. My caseload is also a lot of chronic enteropathies and protein-losing enteropathies. They do often come in on probiotics and still have diarrhea. I still recommend probiotics for a lot of my consultations. I use fiber all the time, so I agree; I tend to reach for fiber more than probiotics, but when I do use a probiotic, it's often because their diarrhea may have been triggered by antibiotics.

**Dr. Tolbert:** We don't have many biomarkers for GI diseases like we do with other disease processes. We see what the client sees: weight loss, vomiting, diarrhea, change in appetite. We don't know what's going on with the enterocytes, with the tight junctions, with

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inflammation. There have been some studies that suggest that using probiotics in the chronic enteropathy state may improve things related to gut health, just like we're talking about with fiber, but we don't have the ability to quantify this. This is a space where we need a lot more prospective clinical studies to better understand the potential benefits. The studies, even in the case of fiber, have been relatively small. Studies investigating probiotics have been especially small and very heterogeneous, and those of us who work in academic medicine see a population of animals that can be quite different from those in general practice, so the study results might not always fit clinical practice, depending on your practice. I've heard a number of different practitioners say, "I have patients that do great on probiotics and they improve," but the question is: would they have improved anyway? Probiotics are a potential tool in your toolbox, particularly against preventing metronidazole use in the case of acute diarrhea.

**Dr. Ng:** I'm treating more of a primary care population, where we are seeing a lot of otherwise healthy patients with acute diarrhea, acute dietary indiscretion, and, possibly, some dysbiosis. Probiotics and fiber can be good treatments to offer in these mostly healthy populations with acute GI signs. As practitioners, our first goal is to do no harm. That can be a major benefit of probiotics; they are unlikely to cause harm, and we can start our management plan there and evaluate for benefit. If we don't see a benefit, that's when we must pursue all of our other diagnostic options and consider that probiotics really might not be helping in that situation. Like Dr. Tolbert said, I do think a lot of them get better with a probiotic, but would they have gotten better doing nothing at all? I think there's also something to be said for the fact that clients feel better if they have something in hand the veterinarian has recommended. One of the greatest trends we have seen in the past decade is avoiding the use of metronidazole for every single case, so avoiding the unnecessary use of antibiotics with these acute cases is something that should be emphasized.

**Dr. Molleson: How do you decide whether to use a fiber-enriched diet or a fiber supplement? How do you go about finding a trusted fiber supplement?**

**Dr. Tolbert:** I find having the ability to add fiber to a diet to be helpful in so many ways. People are often very resistant to changing their pet's diet, and often it doesn't make sense to change the diet; for example, when you have a growing animal, you need them to stay on a diet that is adequate for growth, especially in young, large-breed dogs. Another example would be in protein-losing enteropathy; in those cases, I will often take things in a very stepwise approach. I may first switch the pet's diet to a highly digestible, low-fiber diet. My priority for that animal is to start getting the gut healthier so it will absorb protein and fat again. Then I may add fiber in later depending on the stool quality. I think the nice thing about having a supplemental fiber source is that I can do things in a very targeted, strategic, stepwise way with the owner.

**Dr. Rollins:** I have been quite frustrated with my fiber supplement options for several years. With most diarrhea cases, I think having that blend of insoluble and soluble fiber is optimal. There's been a lot of focus on psyllium. It has pretty much been the mainstay of fiber supplementation. It has its place, but psyllium alone is not really giving us the stool quality and textures and things that would be considered normal by most pet owners. I'll sometimes use some bran cereals, but there's also a lot of other stuff in those cereals, and maybe I don't want that phosphorus or this and that. And although some people may reach for pumpkin, there generally isn't enough fiber to make an impact. I am quite excited about the new fiber product from

Nutramax Laboratories, Provable Fiber. I think it's going to be more easily available than other options in the past, and it has that mixture of fiber supplement sources. I look for a mixed fiber source, and until recently, there have not been a lot of great options.

**Dr. Tolbert:** When it comes to supplement selection, you have to really trust the company. Not all companies have acceptable quality control. If we think about where the fiber sources are coming from, they're largely plant-based that come from the ground. What comes with the ground? Well, things like soil, which can contain not only microorganisms but also heavy metals, and that can be scary, especially with dogs and cats that have been receiving fiber sources for a long period of time. Being able to contact a company and ask, "Can you tell me a bit about your quality control? Do you test for heavy metals? Which ones are you testing for?" is important. I feel strongly about needing to feel confident that what I'm recommending for a patient is not going to harm them, and Nutramax has my trust. They've always been very open in communicating with me whenever I've had any questions, and I feel comfortable using their fiber.

**Dr. Ng:** When looking for a supplement company you can trust, I look for one that has a reputation and history of putting out supplements that have accessible, peer-reviewed, published research. Another important thing about supplements is, if a client has a particular supplement they want to give their pet, we need to take a look at that label and the ingredients. I find that a lot of alternative medicine supplements contain something like additional calcium or vitamin D; we need to make sure that there's nothing harmful to that patient in the supplement. Not only are transparency and the ability to easily communicate with the company important, but so is accessibility. If a company is out of stock suddenly and you can't get that supplement for months and months, then that might not be the best company to go with.

**Dr. Rollins:** Recently, consumerlabs.org showed that several psyllium supplements contain high levels of lead.<sup>1</sup> When it comes to looking at ingredients and the concept of do no harm, it's the things that *aren't* on the label that make me more worried. We just don't know what the contaminants are, so I tend to be extremely judicious in supplements. If I don't have evidence that it's helpful, I'm probably not going to suggest it.

**Dr. Molleson: As mentioned, Nutramax Laboratories has introduced a new fiber supplement called Provable Fiber Supplement. How is it different than the Provable clinicians are currently using?**

**Dr. Parker:** Provable Fiber is a fiber supplement (see

## About Provable® Fiber Supplement



Provable® Fiber Supplement, from Nutramax Laboratories Veterinary Sciences, Inc., the #1 veterinary-recommended supplement company,<sup>a</sup> contains a proprietary blend of soluble and insoluble fibers with prebiotics, including microcrystalline cellulose, apple fiber, psyllium husk, beta glucan, and gum arabic.

- **5-in-1 proprietary fiber blend:** Provides viscous and fermentable properties
- **Balanced fiber benefits:** Supports GI health
- **Binds and absorbs:** Provable® Fiber has the ability to bind >10× its weight in water

<sup>a</sup>From a survey conducted among small animal veterinarians who recommend animal supplements



**About Provable® Fiber Supplement**, previous page). It is not a probiotic. It is truly a multifiber product, and a lot of those fiber sources will act as prebiotics. Having a multifiber powder that is a mix of different fiber sources gives us another tool so we don't have to rely on adding single-agent fiber sources or try to be mad scientists and come up with our own blend of psyllium, pumpkin, cellulose, and wheat bran. I've had pretty good success with it in both dogs and cats, and I do think that it's palatable; I have not had any patient turn away from it. Regarding the utility of fiber for managing GI disease, sometimes you just need to add a little fiber to the animal's preexisting diet, whether it's a low or moderate or even high-fiber diet. Sometimes we'll use a specifically formulated, fiber-enriched diet to manage fiber-responsive diseases, but I have added this supplement to fiber-enriched diets for some patients that were partial responders to the diet, and I have seen additional improvements in their stool quality. It can be used either on its own as a fiber supplement or in conjunction with any other type of diet for whatever we're trying to achieve, whether it's on top of a limited-ingredient diet, where we don't have as many fiber-enriched options, or a hydrolyzed diet, where we want to have the base of a hydrolyzed diet. Because a lot of hydrolyzed diets tend to be lower in fiber, this tends to be a common scenario, so it can be a nice addition for some dogs with chronic enteropathies or allergic disease.

**Dr. Tolbert:** Another thing to keep in mind is anything given orally can bring in dietary protein, which you have to be mindful of, especially if your patient has an adverse food reaction to dietary protein. That's the nice thing about supplemental fiber; it's not really bringing any specific dietary protein that we need to worry about. The other thing to pay attention to is caloric content. Provable Fiber is roughly 1 calorie per gram. With supplements, not only are we looking for quality control and ingredients, but we also have to keep in mind the significance of any protein or calories that we're adding. Another reason I really like Provable Fiber is because of its low caloric content and the fact that it's not bringing in additional dietary protein.

**Dr. Molleson: Total dietary fiber, including insoluble and soluble fiber amounts, are listed on the label of Provable Fiber Supplement (see Table). How can clinicians use this information to inform administration and titration of this supplement?**

**Dr. Parker:** I think we all have slightly different starting doses for fiber supplementation, but in general, I think it's always safer to start on the lower end, because too much fiber can exacerbate signs and cause bloating, flatulence, and diarrhea. I'm not administering based on a mg/kg basis. The starting amounts recommended on the Provable Fiber label are very fair and reasonable, but I also think that veterinarians and pet owners should be able to titrate up or down based on what they're seeing. I will often tell people the maximum amount they should add, because, at a certain point, you are going to have a ceiling effect or you're going to be supplementing too much fiber and make the stool quality worse.

**Dr. Tolbert:** I agree with that. That's the good thing about starting low. You may not have a clinical effect, in which case you can go up, but what we want to prevent is the patient having an adverse effect and then losing the trust of the client. It's all about trial and error.

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**—Dr. Tolbert**

**TABLE: Provable® Fiber Supplement Characteristics<sup>a</sup>**

	<b>Microcrystalline Cellulose</b>	<b>Apple Fiber</b>	<b>Yeast Extract (Beta-1,3/1,6-Glucan)</b>	<b>Psyllium Husk Fiber</b>	<b>Gum Arabic</b>
Solubility	Low	Moderate	Moderate	High	High
Viscosity	Low	High	Moderate	High	Low
Fermentation Rate	Low	Moderate	High	Low	High

<sup>a</sup>Provable Fiber Supplement provides a blend of fiber sources, offering a variety of fiber characteristics to help manage individual patient diversity.

**Dr. Molleson: What clinical insights and experiences do you have with how Provable Fiber Supplement can be used? What cases have made you reach for this product?**

**Dr. Parker:** A cat named Squirt had chronic diarrhea from the time of adoption on. We did all the typical kitten management—multiple fecal tests, multiple rounds of deworming. He had an unremarkable physical, unremarkable lab work, unremarkable everything—just chronic diarrhea. It was mixed-bowel diarrhea but with a large proportion of large-bowel signs. My first instinct in any large-bowel diarrhea case is to see if the situation can be made better with fiber, so we started with a veterinary therapeutic fiber-enriched diet. We went from liquid diarrhea and a fecal score of 7 to having some fecal form and a score of like 4 or 5. It seemed like the fiber had helped, but my gut feeling was he needed a little more fiber, and this was right when I had first received some samples of Provable Fiber powder. We started with the labeled feline dose of one-eighth to one-fourth of a teaspoon twice a day, and his stool quality improved to normal. He's been on this fiber powder with the fiber-enriched diet for several months now, and he's doing amazing. I love that we didn't have to trial him on antibiotics; we didn't have to consider putting such a young cat on steroids for the rest of his life. Fecal microbiota transplantation might've been my next step, but we didn't have to go that route. It's nice when something as simple and benign as dietary intervention and fiber can make that big of a difference in the well-being of a patient and, just as importantly, its owner.

**Dr. Tolbert:** I've used Provable Fiber in a couple patients, including my own dog. My pet has situational fiber-responsive diarrhea, so she gets stress-associated diarrhea after thunderstorms. I've been using Provable Fiber, and it's worked really well. It's very palatable. I just mix it with a little bit of water in her food. I also appreciate the labeling, which is really transparent. I'm glad Nutramax Laboratories provides the active ingredients, the inactive ingredients, and the caloric information. Again, this seems obvious, but you'd be shocked at the amount of supplements you

can pick up that don't have much information, which can be really frustrating.

**Dr. Parker:** I had another unusual case that responded well to Provable Fiber. My patient was a brachycephalic dog with chronic diarrhea. She was diagnosed with short-bowel syndrome a while ago, and she has recovered nicely. Her remaining intestinal tract has adapted, but she came to me for a nutrition consult and was being managed on a lower fiber, hydrolyzed diet for allergies, along with canned pumpkin, but the owner lamented that she didn't like traveling with the cans of pumpkin. I recommended we switch to psyllium powder, but the pet had explosive diarrhea after starting the psyllium powder. That's not my typical experience with psyllium, but, of course, we stopped it, and I recommended we start Provable Fiber. Next thing I knew, her owner was emailing to request a refill, as her pet had responded really well. That's a good example of when one dog had very different responses to different fiber sources. It speaks to the fact that every patient is an individual. Even when you know fiber should help, you don't always know which fiber is going to have the best impact. So, don't give up on fiber if the first fiber supplement you try doesn't have the desired effects. The patient might just need a different type or amount of fiber.

**Dr. Ng:** It's wonderful to have this new product available and accessible on our shelves. In these cases of acute diarrhea, we have something to reach for that is labeled for veterinary patients, has administration amounts, and is easily accessible for the client. We don't have to try to explain storage and administration for things like canned pumpkin or psyllium. Having something that has a veterinary label on it is important, and Nutramax's Provable is a familiar name to both practitioners and clients. I also like that we can titrate the amount of fiber easily for each individual patient. Another interesting observation that I noticed when I was using this new product for my dogs is that, when you mix this product with water, you see it almost solidifying in front of your eyes. This can be a cool experience for clients to see and think, "Oh wow, this is going to solidify in those bowels and hopefully we're going to get some firm poops at the end." For a lot of clients, seeing is believing, so it's nice that it provides a different experience from just plopping some canned pumpkin on top of their food.

**Dr. Tolbert:** Here's another situation when I would use this product: we know that dogs and cats with chronic enteropathy are going to have flares, even with the best control. Sometimes the stimulus is obvious, like when they get into something silly that they shouldn't have, but sometimes, you have no idea why they're having a flare, and it's nice for clients to have some-

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thing available at 3:00 AM that they can give that may work to ameliorate the diarrhea. In contrast to a probiotic, which is often only stable for 30 or 60 days, this fiber source has a longer shelf life and allows clients to have something at home in their toolbox that will keep.

**Dr. Molleson:** Dr. Parker, you have been involved in research regarding the use of metronidazole in cases of noninfectious acute diarrhea. What is this area of research telling us, and how does it relate to fiber?

**Dr. Parker:** There was a prospective, randomized, placebo-controlled clinical trial looking at dogs presented to The Ohio State University Veterinary Medical Center ER service for noninfectious acute colitis.<sup>2</sup> We looked at clinical response, daily fecal scores, diet tolerance, and dysbiosis index. We did some other microbiome analysis, but the main clinical endpoint was time to resolution of diarrhea. There was a longer time to diarrhea resolution in the metronidazole dogs. I don't think most clinicians would have assumed that sort of response, and the intent was not necessarily to show that a highly digestible diet plus placebo or a fiber-enriched diet is going to have a faster response than metronidazole. The study did show that there was an increase in the dysbiosis index in the dogs that received metronidazole, which persisted during the course of the study. It then started to come down a little bit after the metronidazole was discontinued. In the GI world, we are starting to pay more attention to both the acute and chronic effects that antibiotics can have on the gut microbiome and how they can contribute to a state of dysbiosis. When we have multiple options that could all lead to resolution of diarrhea, why not choose the one that would have the least potential harm? Antibiotics have been used for decades upon decades in the management of diarrhea. We are trying to get away from the term antibiotic-responsive diarrhea and have a paradigm shift that, yes, we want to affect the microbiome, but it doesn't have to be with antibiotics. We can affect the microbiome with prebiotics, probiotics, fiber; literally any change in diet will affect the microbiome. This study was one of the first of its kind to say that it wasn't better to give metronidazole and it might've caused some adverse effects that we probably should aim to avoid in the future.

**Dr. Molleson:** One clinical challenge I come across is trying to decide when a patient would be considered a "fiber fail." What advice can you offer in terms of duration of fiber supplementation and ensuring you have given fiber an appropriate trial before moving onto other diagnostics or management options in cases of gastrointestinal disease?

**Dr. Rollins:** It's first helpful to determine if fiber is the best option for a given case. If we have something that

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is more upper GI, gastric esophageal reflex, or vomiting, I'm probably not reaching for fiber, because that can slow everything down in the stomach, and I want to move things out of the stomach a little more quickly. The other time I think about choosing a highly digestible, low-fiber diet versus supplementing with fiber is when the intestines may be compromised to the point of either digestion or absorption being severely impaired. For example, if I have a patient with parvovirus, hemorrhagic gastroenteritis, or severe protein-losing enteropathy, adding more fiber might block a little bit of that absorption, so it may not be the best option in the first place. Also, by adding fiber in those cases, if things are not absorbed in the small intestine, they will go to the large intestine. I want to provide highly digestible diets for that upper intestinal compromise, and that's where I really like the ability to supplement small amounts of fiber. I might have one of those cases where they do nicely with something that is highly digestible for that absorption but there's still soft stool. I can add a bit of fiber supplementation and titrate up to effect, as opposed to starting with a therapeutic GI fiber diet. I think it's always important to consider whether fiber supplementation or a highly digestible diet would be a better option. Think about the primary disease, and if you have significant upper intestinal compromise, then fiber may not be the place to start. Make sure you choose the right patient population first.

**Dr. Parker:** We most often think of fiber as a first line of attack for large-bowel diarrhea, but it can also be extremely useful in small-bowel diarrhea. I have some chronic vomiters that don't do well with hydrolyzed diets, limited-ingredient diets, or immunomodulation that do well with fiber. So I'll consider fiber for any GI disease. I'm most inclined to think it's going to work for diarrhea, and certainly for constipation, but I wouldn't preclude using it in a chronic vomiter either.

**Dr. Tolbert:** In a lot of GI cases, fiber can be helpful, but it is important to consider the patient's specific signalment and clinical signs. For the chronic vomiter, if I've tried everything, I may go ahead and try fiber, but like Dr. Rollins said, you may first consider whether a patient just has bad delayed gastric emptying or has

terrible ileus or gastroesophageal reflux. Those are the cases where you might shy away from fiber, especially initially.

**Dr. Parker:** As far as when to consider a fiber trial a failure? In nutrition and internal medicine, we typically say that it might take 3 to 4 diet trials to find the right diet for a patient. We can think of fiber in a similar way, where some animals will do way better with one type over another. If you try one fiber-enriched diet and don't get the response you want, consider that there might be a better response to a different fiber-enriched diet. If you try one fiber supplement and don't get the response you want, try another. I don't think any of us are here to say that fiber is going to fix every patient with GI disease, but given the level of success that we have seen with managing patients with fiber-responsive GI disease, I think it's important to be advocating for using fiber; it's an easily accessible option with minimal risks associated with it. Unlike some alternative options, it isn't going to contribute to antibiotic resistance, it isn't going to have systemic side effects from chronic immune suppression, and it's relatively cost-effective. And it may even have wider, far-reaching beneficial effects beyond just gut health because of its effect on the microbiome and the entire host.

**Dr. Ng:** For patients with acute diarrhea, we are often making complicated recommendations that involve probiotics, diet changes, or over-the-counter fiber supplementation. It's a lot to navigate. Now that we have a mixed fiber supplement readily available, I think that, for those short-term acute GI cases, this is something that is readily accessible and easy to use.

**Dr. Rollins:** Another disease that we haven't really touched on and is worth mentioning is diabetes mellitus. Fiber delays gastric emptying, slowing glucose absorption. Some patients may not be a good fit for therapeutic diets, like a diabetic schnauzer that needs a low-fat diet, but utilizing a mixed fiber supplement on top of its diet could be a great option.

**Dr. Molleson:** Another topic of confusion that comes up when we discuss fiber is that, under different circumstances, it can be used for diarrhea or constipation. Can you help practitioners make sense of this?

**Dr. Parker:** Fiber absorbs water and adds bulk, which is beneficial in cases of diarrhea, but that bulk can also soften stool and help make it easier to pass, which can be beneficial with constipation. The first step in managing constipation is to differentiate between constipation and obstipation. In cats especially, we think about chronic dehydration as a major contributing factor toward constipation, so we should consider what the underlying etiology might be. I'm going to treat an obstipated cat with megacolon a bit differently than a cat that has small, hard feces. In a constipated animal, I might preferentially choose a diet that's a little bit higher in insoluble fiber to bulk the feces, stretch the intestinal wall, and stimulate peristalsis. If I've got a megacolon cat that has extremely poor colonic motility, the last thing I want to do is bulk up that colon with a bunch of insoluble fiber that it then can't push out. I'm going to either use a highly digestible, low-fiber diet or a middle-ground, psyllium-enriched, soluble-fiber diet that can potentially have some benefits, even though sometimes it seems counterintuitive.

**Dr. Rollins:** In dogs, the first thing I want to know is what they are eating to get a general sense of their fiber intake. If they're on a high-fiber diet and they're constipated, I'm going to drop their fiber. If they're on a low-fiber diet and constipated, I'm going to add more fiber. For constipated patients, I often like to use a blend of fiber types. Insoluble fiber, like Dr. Parker said, is going to help with motility. It stimulates those stretch receptors by bulking up the stool. Soluble fibers are going to make things a bit softer so you're not getting really big, hard stool but rather slightly bigger, softer stool. That's why that fiber blend is important for constipation management.

**Dr. Tolbert:** If you're going to use fiber, it's also important to make sure that the patient is well hydrated. You always want to think about ways to increase water consumption for that animal, especially in the case of constipation. You want to make sure your patient is hydrated enough to allow a higher fecal water content. You may need to think about creative ways to get water into the patient. That's a really important point, especially for those CKD patients when the last thing we want to do is make them more dehydrated. ●

## References

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