



Probiotics in the Whitetail Deer Industry

story by SHANE HORROCKS, M.S., NUTRITIONIST

Probiotics used for animal health have been around for over 30 years, however not until the last five or so years have they become extremely popular. The reasons for this are numerous based upon proven facts from university conducted research. But what exactly are “probiotics”?

Probiotics are live, microorganisms that are fed to animals to promote intestinal health thus leading to greater overall health. The Latin meaning of the word “probiotic” actually means “for life.” When we talk about probiotics in deer microbiology or deer nutrition, we are usually referring to live beneficial bacteria. Beneficial bacteria can be naturally found in the digestive system of all living mammals, most residing in the small and large intestine. Ruminants, such as deer, have beneficial bacteria in the rumen,

but those are different types of beneficial bacteria and will not apply to this article. For now, we will be focusing on the beneficial bacteria located in the intestinal tract.

There are many different species of probiotics and each will behave differently in the digestive system. Some probiotics help to produce enzymes to digest food, while others produce acids to defend themselves from harmful bacteria. Some grow and replicate in the colon (large intestine) instead of the small intestine. Some probiotics are more effective at fighting *E. coli*, while others are more effective against salmonella. Some probiotics die very easily during temperature fluctuations, while others are more tolerant of acidic environments and can live for thousands of years under very harsh conditions. Basically, not all probiotics are created equal and it is very important to use species specific probiotics to accomplish your goal. If your goal is to increase feed efficiency, there are probiotics for that. If your goal is to reduce *E. coli* in the small and large intestine, there are probiotics for that.

The way commercial probiotic companies decide on what probiotics to use in their products requires a large amount of research and selective gene analysis to obtain the exact probiotic species to use. This is extremely critical to the effectiveness of the probiotic. Some companies will also go an extra step to microencapsulate the probiotics. This microencapsulation helps to protect the bacteria from heat, acids oxygen, and other environmental attacks that can be harmful to the bacteria. Some probiotic species are more beneficial to the first 30% of the small intestine, others are more beneficial to the last 30% of the small intestine, and some are more beneficial to the colon. Microencapsulation can help selective probiotics reach specific sections of the intestine where they can be the most effective promoting intestinal health.

Probiotics used in the deer industry have many benefits when used ranging from increased feed efficiency, to reducing the shedding of pathogenic bacteria. A good product contains species specific, microencapsulated probiotics and covers a wide range of health benefits.

Today, due to antibiotic resistance, many companies are using probiotics to replace antibiotics. Probiotics that are fed to animals, find a place to inhabit in the small and large intestine, then compete in many ways with harmful bacteria to reduce their presence in the gut. First, probiotics compete for the same food as pathogenic bacteria. If there is no food or nutrients for pathogenic bacteria to eat, they die. Secondly, they regulate intestinal pH levels. Most bacteria,

beneficial or pathogenic, must have a very specific pH to live and reproduce. Many probiotics favor different pH levels than what most *E. coli* or salmonella species favor. By regulating intestinal pH, probiotics can ensure their survival over the pathogenic bacteria. Finally, some probiotics can also produce their own antibiotics! Yes that is correct, some probiotics produce antibiotics to combat pathogenic bacteria in the intestine! Probiotics can also help in other various ways, such as reducing intestinal inflammation and diarrhea caused by bacterial pathogens (*E. coli*), as well as inhibiting toxins produced by pathogenic bacteria.

It is always important to use the correct probiotic species but it is even more critical to use the correct probiotic strain. The strain is indicated by a specific number and is not printed on the product label or disclosed by the company. This information is not public and is nearly impossible to identify the correct probiotic strains in a product. This is where experience and trust in a product will come in handy. Use products that have been proven in the industry to work. Certain probiotic species will perform better depending on the application for deer and certain strains will perform better competing with the pathogenic bacteria in the gut.

Probiotics are making headway in today's deer industry, but it is extremely important to understand what type of probiotics you are using and what they can do for your herd. Look into each probiotic company for quality, research and experience. Find a company that can provide you with species and strain specific bacteria. This will give you more confidence and comfort when your deer, and little fawns, have the probiotic protection they need and remember not all probiotics are created equal. •

