

Natural Dewormers

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I've been asked a lot lately what I think of natural dewormers for horses, so I figured it was time I write about them. What do I think of natural dewormers? In short: not much. I wish they worked as claimed; I really do. But so far I'm led to conclude, as another vet once wryly commented, that "natural dewormers work great, when used in combination with ivermectin." At issue for me are their efficacy (i.e. their effectiveness) and their safety.

Fecal egg counts

Many proponents of natural dewormers cite fecal egg count results of zero as proof of efficacy. But there are some real problems with that conclusion.

For one thing, fecal egg counts are very imprecise at gauging the level of parasite infestation in an individual horse. This test tends to underestimate the degree of parasitism because only fertile, egg-laying, adult worms produce eggs, and even they don't produce eggs consistently. Furthermore, it takes a large number of egg-laying worms to yield a positive fecal egg count. So, a horse can have a fecal egg count of zero and still be parasitized. Fecal egg counts also vary with the horse's diet and with the season.

Fecal egg count is a simple lab test which estimates the number of internal parasite eggs in 1 gram of the horse's manure, or feces. The result is reported in eggs per gram (epg). Parasitologists consider values of >200 epg to indicate severe parasite infestation. This test primarily detects nematode eggs (roundworms, pinworms, and the large and small strongyles). Other tests are needed to identify the presence of tapeworms, bots, and the larval stages of any internal parasites.

More problematic, though, is the fact that two of the most common internal parasites in horses today are not detectable by the standard fecal egg count method (fecal flotation). They are tapeworms and encysted small strongyle larvae.

Tapeworm eggs are contained within segments of the tapeworm which break off into the intestinal contents like little pods. Even the individual tapeworm eggs are larger and heavier than strongyle eggs, so tapeworm eggs or egg-filled tapeworm segments sink rather than float in the concentrated solution routinely used to perform fecal egg counts.

Encysted small strongyle larvae are not only too immature to produce eggs, they are encapsulated (encysted) within the lining of the intestine at this stage of their life cycle. A horse can have a severe infestation with either of these parasites, and extensive intestinal damage, yet have a fecal egg count of zero.

Individual susceptibility

And then there is the matter of individual susceptibility to internal parasites. In veterinary parasitology there is an interesting phenomenon called the 80-20 principle which seems to hold true across all livestock species. It states that 80% of a herd's total parasite burden is carried by only 20% of the animals in the herd.

In other words, in any group of horses about 20% of the horses will be heavily parasitized (carrying about 80% of the total worm burden for the group) and will be the main source of re-

infestation for the rest of the herd and for themselves. The remaining 80% of horses in the group will have very few parasites (only about 20% of the total worm burden). After deworming, the same 20% of heavily parasitized individuals soon become heavily infested again. And the remaining 80% of individuals who are only lightly parasitized tend to stay that way, even without deworming.

The difference between the 20s and the 80s is in the efficacy of the horse's immune response to the parasites. With exposure, most healthy horses mount an effective immune response to internal parasites which keeps the numbers low, unless the horse is overwhelmed by large numbers of infective larvae or is ill, malnourished, stressed, or otherwise immune-compromised.

Before the widespread use of ivermectin, the most common and important internal parasites in horses were large strongyles, which included *Strongylus vulgaris* (redworms or bloodworms). Their eggs are readily detected with the standard fecal egg count method. Ivermectin is highly effective against both immature and mature stages of these parasites, so they are now quite uncommon, except in poorly managed horses. In their place, tapeworms and encysted small strongyle (aka cyathostome) larvae have risen to the top of the heap. Each can cause colic, and the larval small strongyles can cause diarrhea and extensive damage to the intestinal lining. Neither parasite is susceptible to ivermectin (although the small strongyles are, later in their life cycle).

The message here is that a healthy immune system is important in keeping the numbers of internal parasites low. It also suggests that these natural dewormers may be getting too much credit for keeping fecal egg counts low.

Diatomaceous earth

One of the most commonly used ingredients in these natural dewormers is diatomaceous earth or diatomite. Diatomaceous earth is a naturally occurring, soft, chalky rock that, when crushed, yields a fine, light-grey powder. It consists of fossilized remains of tiny hard-shelled algae called diatoms. Owing to their high content of crystalline silica, diatomite is mildly abrasive.

In fact, that is the mechanism by which diatomite is purported to kill intestinal parasites. It is believed that the abrasive micro-surfaces of the diatomite cut the outer membranes of the parasites like thousands of tiny blades. But I question that premise. Industrial-grade diatomite has a high silica content and is used as a mild abrasive. However, food-grade diatomite has a much lower content of crystalline silica, so it is minimally abrasive.

And even if the abrasion theory is valid, then what does this stuff do to the delicate lining of the digestive tract? While I could not find even one scientific study which validates the use of diatomite against internal parasites in horses or other livestock, my search did turn up several articles documenting the health risks of chronic exposure to diatomite. When inhaled, it causes inflammation of the airways and, with chronic exposure, even some fibrosis (scarring).

Even more concerning was a study which showed that chronic oral intake of diatomite can damage the intestinal lining, altering its absorptive properties and making it more permeable to potentially harmful substances. So, it seems to me that the practice of using diatomaceous earth as a daily dewormer for horses is either useless but harmless or useful but harmful, depending on the grade of diatomite used.

Antiparasitic herbs

Other common constituents of the natural dewormers are herbs which, it is claimed, kill, inactivate, or repel internal parasites. The list is long and includes black walnut hulls, chamomile, cider vinegar, garlic, Oregon grape, pumpkin seeds (and various other seeds), sage, thyme, wormwood, and yarrow.

Now, as you may already know, I'm a big fan of herbs and I use them a lot in my practice. Even so, I remain to be convinced of the safety and efficacy of these herbs as antiparasitic agents in horses.

I have safety concerns about some of the herbs on that list, such as black walnut and wormwood. I think that, at the dosages needed to rid a wormy horse of intestinal parasites, the potential for harmful effects (e.g. colic, diarrhea, laminitis) outweighs any antiparasitic value they may have. And I question the efficacy of the other herbs.

Purgatives

Some natural dewormers also contain herbs or other substances which stimulate bowel contractions, with the aim of physically expelling any intestinal parasites. Senna, cascara, and aloe are three such herbs. Suffice it to say that I do not consider purgatives either safe or effective for parasite control in horses.

Keeping chemical use down

Internal parasites remain an important cause of illness and ill-thrift in domestic horses. I'm not averse to using chemical dewormers, but I do try to limit their use, as much for the horse's sake as for their environmental impact. (For example, ivermectin does not discriminate; it is active against both parasitic organisms and beneficial soil nematodes and insects such as dung beetles.)

Even if you have no such qualms about the frequent use of chemical dewormers, reliance on these chemicals is not a good long-term strategy for parasite control in horses. No chemical dewormer is 100% effective, and frequent use of these products accelerates the development of drug resistance in surviving parasites. Over the years, one anthelmintic after another has succumbed to drug resistance in horses and other livestock. Agrichemical research and development can barely keep pace with the parasites' drive for survival.

Pasture management and horse health each play crucial roles in any successful parasite control program, and that is where I recommend concentrating the focus and efforts. The guiding principle of good pasture management is to help the horses avoid grazing on heavily infested grass.

To that end, avoid overstocking and overgrazing, remove the manure frequently, and when that is not possible, use the weather to help reduce the number of infective larvae on the pasture. Parasite eggs and larvae can survive cold weather, but larvae are readily killed by hot, dry conditions. The summer drought we get here in the Pacific northwest is an ideal time for running a manure spreader over your pastures to break up the manure piles and expose the larvae within to the scorching sun. (Just take the horses off the pasture first and keep them off for a few days afterwards.)

Good health is the other key factor. It requires a wholesome diet, daily exercise, clean air and water, healthy social bonds, a sense of safety, and an overall sense of enjoyment in one's environment and occupation. With these basic elements, most horses cope ably with the stresses and strains of training and competition, and they remain healthy and happy—which is the key to an effective immune system.

As for how I use chemical dewormers in parasite control programs, it varies with the horse and with the situation. What is appropriate for one horse or farm is not necessarily appropriate for another. As with most things, I tailor the program to the individual horse's needs and recommend chemical deworming anywhere from treatment every 1–2 months to none at all.

I really wish natural dewormers did as good a job as their chemical counterparts. I would much prefer to use a product which comprised ingredients from natural sources. However, an effective natural dewormer may be an unrealistic expectation. The unnatural way most horses are kept contributes to the problem of parasitism. What makes us think there is an effective natural solution to this unnatural situation?

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