

# Review of “Evacuation of sand from the equine intestine with mineral oil, with and without psyllium”

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## Why was this research done?

Horses grazing sparse vegetation on sandy soil tend to ingest varying amounts of sand. This sand may accumulate in the ventral colon and the cecum. The amount of sand ingested, the speed with which this material is evacuated from the gastrointestinal tract, and the signs associated with sand retention are somewhat different among individual horses. Some horses show diarrhea, colic signs, and chronic weight loss. More serious manifestations of sand ingestion include damage to intestinal tissues and even rupture of the intestine.

A number of treatment options have been used to evacuate sand from the gastrointestinal tract. The administration of wheat bran, psyllium, or mineral oil produces good results in some horses. Psyllium is a vegetable fiber derived from the ripe seeds of several species of *Plantago* plants. It is believed to stimulate peristalsis, the wave-like contractions that push ingested material through the intestine. Previous research projects studying the effects of feeding psyllium to remove intestinal sand have had mixed results.

This study was designed to measure the amount of sand passed from the horse's body after the administration of mineral oil alone as compared to the amount eliminated after the administration of mineral oil and psyllium. The authors also reviewed the results of diagnostic methods used to detect the presence of sand in the intestine.

## How was the study conducted?

According to the report, twelve healthy horses were used in the study which was set up as a double cross-over design. The horses were of Haflinger, Lippizaner, Thoroughbred, and Haflinger-cross breeding; included two stallions and ten mares; weighed between 420 and 560 kilograms; and ranged from 4 to 22 years of age. All horses had access to fresh water and were fed 1.8 kilograms of hay daily throughout the trial.

Before the trial, feces were collected from each horse for three days and analyzed for crude ash to establish a baseline. To begin the trial, all horses were fed 1 kilogram of sand (mixed into a mash of feed and water and consumed voluntarily) once a day for five days. The horses were divided into two groups, and for the next five days the horses in group A were given 2 liters of mineral oil by nasogastric tube each day, while the horses in group B were given a liter of mineral oil as well as half a kilogram of psyllium, also mixed into a mash of feed and water, twice a day. Two weeks later the group treatments were switched. Feces were collected on days 6 to 10, and fresh weight, crude ash, and dry matter content were determined.

The ventral abdomen of each horse was scanned by ultrasound the day before the sand administration was started and again after five days of sand administration. Location of the sand and motility of the intestine were evaluated and scored.

Pulse, temperature, respiration, mucosal membrane appearance, capillary refill time, skin elasticity, peristalsis, appetite, and consistency of feces were monitored daily. With the exception of mild, self-resolving colic signs in one horse on the fifth day of sand administration, physical examinations were within normal limits for all horses.

## **What results were found?**

The authors reported that all horses showed higher crude ash excretion when they were treated with both mineral oil and psyllium than when they received only mineral oil. The difference was particularly noticeable on the second, third, and fourth days of treatment. Crude ash weight, corrected for baseline crude ash output, reached an average of 51% of the administered weight in horses receiving mineral oil and psyllium compared to slightly more than 26% of administered weight when horses received only mineral oil. Although all horses showed increased excretion, results for total weight of excreted sand varied considerably among the individual horses.

Ultrasound scans were done the day before sand was administered, and again after five days of sand administration. No differences were seen in scans from the two days.

Auscultation (listening to sounds coming from the intestines) was somewhat more helpful in diagnosis for the horses in this study. Before sand administration, none of the horses had positive sounds of sand, while 9 of the 12 horses had positive sand sounds after the first application of sand, and 11 of the 12 horses had positive sand sounds after the second application.

## **What does this research tell us about diagnosing and managing horses to minimize the problems associated with sand ingestion?**

Ultrasonography, radiography (x-rays), and auscultation are techniques that can be used to diagnose the presence of sand in the horse's intestine. The authors state that, in some studies, ultrasonography has been used successfully in combination with radiography and an evaluation of the intestine's position and motility to determine whether sand is present. In this study, no difference was seen in ultrasound scans before and after sand administration, possibly because horses in the study were not given a sufficient quantity of sand to produce colic signs or to be easily detected by ultrasonography.

Auscultation was found to be useful in that positive horses always had sand in the intestine, although negative results could not rule out the presence of sand. Again, there was considerable variation among horses, with one horse consistently showing negative results although the same amount of sand was administered to each horse.

Due to variations among studies as to amount of sand, length of treatment time, and treatment method (wheat bran, water, psyllium, mineral oil, various combinations, and control), findings have been inconsistent as to the best method to remove sand from the intestine. In at least one study, control (untreated) horses showed the largest percentage of sand being passed. The authors suggest that more study may reveal further information about the efficacy of various treatments, as well as the practicality of using psyllium as a prophylactic agent in the prevention of sand colic.