



FIBRE-BEET MASH & DIARRHOEA

According to Wikipedia, diarrhoea is the condition of having loose, liquid, or watery bowel movements. For the equine, faeces are soft and watery, and the amount excreted is greater than normal.

Horses not only have the production of watery faeces, but also can have “free faecal water” where horses could even produce normal faeces; however, before, after, or during, or independent from defecation, faecal water is produced and pollutes the tail and legs, and may even cause skin lesions.

Diarrhoea, to be considered ‘chronic’, has to have been present for at least 7 to 14 days. In some cases, the diarrhoea will persist for weeks or months, with recurrent attacks of changed faeces texture from “cowpat” consistency to real watery diarrhoea, separated by periods of relatively normal faecal consistency. Additionally, acute diarrhoea is more associated with a sudden pathogenic invasion.

In the adult horse, chronic diarrhoea is almost invariably associated with large intestinal (caecal and colonic) disease. It could be caused either by physical damage to the colonic wall or physiological disturbances of colonic function. Of the latter, pathogen, toxic or dietary dysfunction would be the main causes. Generally speaking, negative factors initiate an inflammatory response within the caecal/colonic walls, increasing peristaltic sensitivity – which increases throughput, whilst decreasing water absorption – increasing the wetness of the faecal material.

The causes of inflammatory response can be categorised, but the result is complex, involving disruption of the microbiome, the gut barrier and the immunological response.

The doamucus barrier is a layer of mucilage bound with phospholipids that interfaces with an unstirred water layer, protects the absorptive gut cells from physical damage, whilst allowing diffusion of nutrients. Generated by the goblet cells, mucilage production can vary along the gut length. A thicker, less permeable barrier coats the stomach as an aid to protect against ulceration, while large intestine permeability is less than ideal. The mucilage layer also provides a barrier against microbial adhesion; one of the major risks to gut disorders is the adhesion of pathogens to the gut wall. Supported by secretions from Paneth cells of the gut wall, the mucus barrier also contains antimicrobial chemicals. The gut wall is the site of absorption, with nutrients passing both across and between the cells.

Finally, internally, the third barrier is the immunological system. Peyer’s Patches, activated by bacterial invasion through M-cell mediated routes (a system that maintains immunological activation through T-cell and B-Cell acquired immunity) maintains the body’s defence against microbial damage.

A healthy gut depends on interaction between the three barriers, and disruption of any of them can lead to an inflammatory response. Stress, for example, can lead to a reduction of the mucus layer, reducing a physical barrier to microbial activity.

Similarly, pathogenic invasion can displace the gut’s natural bacteria that adhere to the mucus barrier and can threaten to overwhelm it. Toxins, such as ingested mycotoxins, can be absorbed, probably through dysfunctional processes between the gut wall cells, and this will generate an immune response. These are the types of action that will initiate an acute response, potentially leading to diarrhoea. In each case, it is a functional change to the microbiota that gives the symptomatic response.

However, the main cause of chronic diarrhoea is usually dietary. Most common actions are sudden changes, especially towards a higher starch diet, although changes in feed type can all be equally problematic.





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The microbiota in the gut is an extremely complex balance between different groups of microflora. From acid loving bacteria that live in the stomach, capable of utilising starchy material, to fibre digesters in the hindgut, living in a more neutral environment, each has its own fermentative action, producing a range of by-products (such as short chain fatty acids, sugars and amines). Other microbes use these by-products and generate further end products, and this process continues so there is a range of fermentative products, along the gut length at different proportions and levels, depending on location.

From this, it is fairly obvious that any dysfunctional process can act cause disruption. Under optimal conditions, the process is extremely efficient; in the small intestine macronutrients from the horse's digestive processes are absorbed, alongside some fermentative products; in the hindgut it is mainly fermentation products that are absorbed. When disruption occurs, there can be a shift in microbial populations.

For example, a large intake of starch will encourage lactic acid generating bacteria along the length of the gut; those microbes that use the lactic acid for their needs do not thrive in the hindgut so there is a build up of lactic. Acidity increases causing a shift in microbial growth. The microbiome is compromised, and diarrhoea may follow. Alternatively, mycotoxins may initiate an immune response, localised inflammation and microbiome disrupted.

However, whatever the cause, both enteral and ongoing treatment is similar. According to various veterinary case reports, the rebalancing of the diet to the real nutritional requirements of the patient is needed. It is achieved by avoiding excess carbohydrate from both forage and concentrate, selecting the right proportion between good quality first-cut meadow hay and grounded and pelleted meadow hay that helps to reduce mechanical and physical load of the colon and could help in the formation of more homogeneous digesta.

Enteral feeding for horses with colitis have recommendations, including high fibre pellets and a forage mix of hay and alfalfa. Furthermore, critical diarrhoea and colitis have been associated with deficiencies in the amino acids arginine and glutamine, both of which are involved in protein generation and gut cell replacement.

What is emerging from the various enteral and permanent diets to overcome diarrhoea and keeping it at bay, is a mix of coarse and fine fibre fractions - a homogenous mix - low starch and a reasonable amino acid profile.

Fibre-Beet Mash not only fits these criteria, but also has bioactive properties. Fibre-Beet Mash is rich in β glucans (from its oat fibre component). B-glucans supports immunomodulatory processes that help with inflammatory cues. The pectins present stimulate mucus release in the gut strengthening the gut barrier matrix.

At the same time, the profile of fibre supports optimal hindgut integrity; fermentation patterns generate good levels of butyric acid, which is a major energiser of hindgut cells. Data has shown that the ingredients of Fibre-Beet Mash have a prebiotic effect that improve the fermentation of forage in the hindgut; this again, will maintain the integrity of the microbiome.

The more that grass can supply the nutrients, the more optimum is the microbiota. Additionally, the consistency of Fibre-Beet Mash can help offset seasonal differences in forage profiles. Finally, the amino acid profile complements that of forage, helping maintain gut protein turnover.

Fibre-Beet Mash is a high fibre conditioning feed. However, it also has the ideal properties, from bioactives to nutrient profiles that support the gut microbiota to the physical and physiological integrity of the gut barrier to ensure optimal function, and help avert those conditions that cause diarrhoea.

