Horses evolved to ingest a high fibre, low starch ration on an almost continual basis. Foraging behaviour is important to the maintenance of a healthy digestive tract, as the chewing process produces large amounts of saliva, which helps to buffer the acid that is produced in the stomach. The way in which we keep and manage horses often means that they are unable to exhibit this normal foraging behaviour and are exposed to high stress levels such as during training or early weaning, as well as being fed rations that may have high cereal and starch levels with less than optimal forage and fibre allowance catered for.

These feeding and management practices have been associated with a high prevalence of Equine Gastric Ulcer Syndrome (EGUS).

EGUS is a term that is used to describe ulcers in the terminal oesophagus, non glandular and glandular regions of the stomach and the proximal duodenum. All ages and breeds of horses and ponies are susceptible to EGUS. EGUS was thought to more commonly affect Thoroughbred racehorses, but with the advancement of research and increased ability to be able to study other classes of horses EGUS has significant prevalence in other classifications of performance horses e.g. show horses, eventers, dressage and endurance horses.

The common factor amongst these horses is that they are more likely to have reduced turnout, receive a lower forage intake, are exposed to higher stress levels due to more frequent travel and competition and are therefore also more likely to have irregular feeding patterns. However, it is also becoming more apparent that EGUS can also affect leisure horses and we are certainly now dealing with far more ‘leisure’ cases via our feed helpline.

Ulcers have been identified throughout the stomach and the most commonly affected area is the non-glandular stratified squamous mucosa along the margo plicatus. Prevalence of glandular mucosal lesions is certainly increasing as expertise in the use of the endoscope rises and the lower part of the stomach is investigated more thoroughly. Lesions that occur in the squamous area of the stomach are usually a result of prolonged exposure or ‘splash’ from hydrochloric acid, to a poorly protected area of the stomach.

Glandular lesions are thought to result from impaired mucosal defence mechanisms rather than a primary peptic or acid injury. This is supported by the observation that feed deprivation models used to create squamous injury do not produce glandular lesions. Glandular lesions can be successfully induced in horses using excessive administration of non-steroidal anti inflammatory drugs and there is increasing evidence of a bacterial component to glandular ulcer development.

It has been suggested that EGUS should be divided into 2 distinct types

1. Primary squamous ulceration – resulting as an increase in acid exposure
2. Primary glandular ulceration – resulting as a failure of the mucosal defences

**RISK FACTORS**

**PASTURE TURNOUT**

In general, grazing horses appear to have a reduced prevalence to EGUS. Horses that are allowed to be horses will trickle feed and freely exhibit their natural feeding behaviour, therefore chewing frequently allowing for

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the copious production of saliva to buffer the continual acid production in the stomach.

FORAGE FEEDING

When fed hay and pasture, horses produced 400-480 grams of saliva per 100 grams of dry matter consumed, whereas when a concentrate feed was fed, horses produced half as much saliva, therefore significantly reducing the buffering capacity. Alfalfa increases the buffering potential due to its higher calcium concentration.

If straw is fed as the sole forage source, an increase in gastric lesions has been observed possibly due to low protein and calcium content, and the coarse nature of the straw may increase gastric irritation.

STARCH INTAKE

Cereal and starch intake has been associated with an increased risk of EGUS in horses. Exceeding 2g/Kg bodyweight (BW) of starch intake per day was associated with a two fold increase in the likelihood of EGUS and feeding more than 1g/Kg BW of starch per meal was associated with a 2.6 fold increase in the likelihood of EGUS.

Other risk factors include the removal from pasture to stable confinement and an increase in exercise and therefore feed intake. High starch diets are likely to result in higher concentrations of volatile fatty acid production and are normally associated with rations that are lower in fibre. As fibre intake reduces, so does chewing time and saliva production. Cereals also tend to be lower in calcium, which is possibly also another buffering agent.

What is important is where energy is being sourced. All of the Saracen feeds which we recommend for the ex-racehorse use non–heating “Super-fibres” and oil as the main sources of energy, removing the need for high levels of cereal. Each feed can be fed alongside our range of chaffs, or Dengie’s Hi-Fi, as well as sugar beet, if you so wish.

FASTING

Horses evolved to trickle feed and therefore almost continuously eat and chew and produce continual but varying amounts of gastric acid. Chewing produces saliva, an important buffer of stomach acid. Withholding feed, even if for a short time, causes a rapid drop in gastric pH. Gastric ulceration can be induced by alternating 24 hour periods of feed deprivation and ad-libitum access to hay for a total of 96 hours of feed deprivation. Feed deprivation reduces the amount of saliva production and feed ‘matting’ to protect the squamous mucosa.

EXCERCISE

Workload has been suggested to be one of the most important risk factors for EGUS. It is suggested that contraction of the stomach during exercise allows acid from the glandular mucosa to reflux up into the non-glandular region of the stomach resulting in acid injury to a relatively unprotected mucosal lining. Less marked injury has been seen in horses that have been fed prior to exercise.

A study in Denmark using leisure horses showed no apparent affect on workload and the risk of EGUS. however, none of these horses were in an intense training programme, like a racehorse, thus indicating that perhaps work intensity is more relevant than ‘work’ per se. Racehorses are also fed and managed much more intensively.

EXERCISE AGE, BREED, GENDER

Some studies have shown an increase to EGUS in younger horses, aged 2-6 years, although this was confined to racehorses, while other studies have shown that the risk increases as age increases.

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A study in leisure horses showed no association between age, breed and gender.

OTHER RISK FACTORS

- Water deprivation
- Electrolyte administration
- Administration of NSAIDS
- Reflux of bile acids
- Bacterial contamination

CLINICAL SIGNS

The clinical signs of EGUS can vary from horse to horse and can also be a reflection on that individual horse’s temperament. Some horses will show more outwardly obvious signs with mild ulceration while others may show limited signs even in the presence of substantial ulceration. Personal observation has shown that horses with glandular lesions tend to have less tolerance to glandular ulcers than squamous ulcers.

Typical signs include:

- Poor appetite or change in eating behaviour
- Weight loss or failure to thrive
- Irritability and general changes in temperament
- Reduced performance
- Abdominal discomfort to girthing or grooming
- Recurrent mild colic

DIAGNOSIS

The only reliable method of diagnosis is by use of the endoscope. For this procedure to be carried out successfully feed needs to be withheld for 12 hours to allow for sufficient gastric emptying. A scoring system is used to score the lesions according to the number of lesions and their severity.

NUTRITIONAL MANAGEMENT TO REDUCE THE RISK OF EGUS

1. Horses should ideally be allowed ad-lib access to long forage or fed at least no less than 1.0 Kg/100 Kg BW.
2. Good doers or horses that are resting or in light work may benefit from a reduced DE content forage source or a low calorie forage replacer. Straw can be used to dilute the hay or haylage ration but should not exceed more than 25% of the forage ration.
3. Restrict cereal and starch intake and ideally feed less than 2 g/Kg BW starch per day and less than 1g/Kg BW per meal. Feeds such as Saracen RE-LEVE® are suitable feeds for the management of horses with EGUS.

RE-LEVE® is a cereal-free mix designed for horses that react to a high starch diet. It be supplemented with Equi-Jewel when more energy is required. Soya hulls, alfalfa pellets and beet pulp supply energy keeping starch to a minimum. It is fortified with Stamm 30®, a concentrated source of proteins, trace elements and yeast, as well as Vitamin E and selenium to support muscle function.


Fibre 19.4%  Oil 9.0%  Protein 13.0%  DE 12.9MJ/kg  Starch 7.8%

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4. Consider adding some alfalfa chaff to your horses feed to increase the buffering potential of the ration. 100-200 grams/ 100 Kg BW is suitable

5. If the DE requirement is high to maintain work rate or body condition introduce some vegetable oil e.g. maize oil to the ration at a rate of up to 100ml / 100 Kg BW or use a high fat, rice bran supplement such as EQUI-JEWEL®. When adding additional liquid oil to the ration, make sure that you check the antioxidant status of the ration e.g. Vitamin E.

   EQUI-JEWEL® is pelleted, high oil, stabilised rice bran supplement designed to increase the energy density of the whole diet, thereby decreasing the reliance on cereals in the diet. EQUI-JEWEL® is also an ideal product to improve topline and condition on your horse.

   The essential fatty acids contained in EQUI-JEWEL® are necessary for healthy coat and skin condition. In addition to improved condition, research has proven its superiority in optimising performance. When substituted for vegetable oils in rations, horses had lower heart rates and subsequent shorter recovery periods.

   EQUI-JEWEL® is fortified with the correct level of Vitamin E and ensures optimum calcium to phosphorus ratio.

   **Ingredients:** Stabilized Rice Bran, Calcium Carbonate

6. Provide as much pasture turnout as is practically possible.

7. Provide constant access to water

8. Look at ways of helping to reduce stress levels

9. Consider using antacid supplements such as KERx RiteTrac™ to help protect the digestive system from gastric lesions.

   RiteTrac is a proprietary blend of ingredients with fast acting antacids and coating agents to help optimise pH in the stomach, as well as the inclusion of a hind gut buffer to aid digestion.

   Available as a powder in 3kg and 6kg tubs, RiteTrac can be simply added to feed at a rate of 120g/day – 60g in the morning and 60g in the evening.

**Medical Treatment**

Your vet is the best person to discuss treatment protocols with, but very generally, the treatment involves the use of medications such as Omeprazole and coating or binding agents to help protect the stomach lining. A combination of preventative and therapeautic treatments may be needed to prevent or manage gastric ulcers.

**FOR A PERSONALISED FEEDING PLAN FOR YOUR HORSE WHETHER THEY ARE CURRENTLY BEING TREATED FOR EGUS OR IF YOU SUSPECT THE PRESENCE OF EGUS, PLEASE VISIT WWW.SARACENHORSEFEEDS.COM AND COMPLETE OUR SIMPLE AND FREE FEED ADVICE FORM.**

**ALTERNATIVELY, IF YOU WOULD PREFER TO SPEAK TO ONE OF OUR QUALIFIED NUTRITIONISTS FOR SOME IMMEDIATE ADVICE, PLEASE CALL OUR FEED ADVICE LINE ON 01622 718 487**

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