- STARCH INFORMATION SHEET -

PREVENTING MUSCULAR DISORDERS

AZOTURIA

To know more about muscular disorders consult the article « "azoturia" in the horse (tying up, ERS, etc.) ».

SYMPTOMS

This disorder is known under various names, azoturia, equine rhabdomyolysis syndrome (ERS), exertional rhabdomyolysis (ER), exertional myopathy, Monday morning disease, tying-up or set fast.

When suffering from « azoturia », the horse suddenly shortens his stride, stiffens and finds it difficult to move. He will finish by blocking, having strong spasms in the dorsal and hind quarter muscles. An increase in the respiratory and cardiac rates are generally seen, as well as the passing of dark brown urine. If a blood count is done, it will reveal a rise in muscular enzyme activity (CK, LDH and AST).

CAUSES

There exists two forms of exertional myopathy :

- A sporadic form, related to unsuitable exercise, **which comes on following one or more days of rest without reducing concentrate feed,** too strenuous exercise, and/or extreme dehydration.
- A chronic form, of hereditary origin, which further divides into two distinct diseases, recurrent exertional rhabdomyolysis (RER) and the polysaccharide storage myopathy (PSSM). **These two cases are favoured by rations containing too much starch and sugar.**

RECOMMANDATIONS

- A study undertaken on **horses suffering from PSSM** demonstrated that the glycaemic and insulinaemic responses were much more marked when horses received 65 g of starch per meal for every 100kg live-weight, compared to 30g of starch per meal for every 100kg live-weight[1]. Nevertheless, the blood level of creatine kinase, which was raised, did not vary between the two groups. It was however lower (normal) in horses receiving less than 15g of starch per 100kg live-weight and per meal.
- A second study undertaken on **horses suffering from RER** demonstrated that those receiving 30g of starch per 100kg live-weight and per meal had lower creatine kinase blood levels than those who had received more than 150g of starch per 100kg live-weight and per meal[2].

These findings well illustrate that horses suffering from PSSM are more sensitive to starch quantity than horses suffering from RER, **and that it is always possible to give cereal containing feeds to horses predisposed to azoturia, by taking great care to not exceed recommendations for maximum starch quantity.**

REVERDY ADVISES

- **To prevent sporadic azoturia in non-predisposed horses, we advise not exceeding 100g of starch per 100kg live-weight per meal.**
- **In horses suffering from RER, we advise not exceeding 50g of starch per 100kg live-weight per meal.**
- **In horses suffering from PSSM, if hay alone is not sufficient to meet all their requirements, we advise limiting the quantity of starch to a maximum of 15g per 100kg live-weight per meal.**

The recommended quantities in the table below have been calculated taking into consideration both the starch provided, as well as the size of the stomach (do not exceed 400g/100kg live-weight of feed per meal).

		Maximum quantity per meal based on the weight of the horse		
	REVERDY feed	400 kg	500 kg	600 kg
Horses suffering from RER	Adult	1 litre (700 g)	1.2 litres (860 g)	1.5 litres (1 kg)
	Adult Energy	0.8 litres (600 g)	1 litre (700 g)	1.5 litres (1 kg)
	Racing	1 litre (700 g)	1.2 litres (860 g)	1.5 litres (1 kg)
	Training	1 litre (700 g)	1.2 litres (860 g)	1.5 litres (1 kg)
	Adult Specific Energy	2 litres (1,4 kg)	2.5 litres (1.8 kg)	3 litres (2 kg)
	Breeding	1 litre (700 g)	1.2 litres (860 g)	1.5 litres (1 kg)
Horses suffering from PSSM	Adult	0.3 litres (210 g)	0.4 litres (260 g)	0.5 litres (320 g)
	Adult Specific Energy	0.6 litres (430 g)	0.8 litres (540 g)	0.9 litres (640 g)
	Breeding	0.3 litres (210 g)	0.4 litres (260 g)	0.5 litres (320 g)

TO LEARN MORE

1. Ribeiro, W., Valberg, S., Pagan, J. & Essen Gustavsson, B. The effect of varying dietary starch and fat content on serum creatine kinase activity and substrate availability in equine polysaccharide storage myopathy. J. Vet. Intern. Med. 18, 887–894 (2004).
2. McKenzie, E. C. et al. Effect of dietary starch, fat, and bicarbonate content on exercise responses and serum creatine kinase activity in equine recurrent exertional rhabdomyolysis. J. Vet. Intern. Med. 17, 693–701 (2003).

"BUT ALSO ..."

- **Unlimited access to water at a temperate temperature,**
- **Ad-lib salt lick,**
- **Strengthen the provision of anti-oxidants (vitamin E and selenium) (E NATURELLE, E SELENIUM).**
- **Administer electrolytes in the event of heavy sweating (ELECTROLYTES GEL, ELECTROLYTES LIQUID)**