



# Impact of feeding and housing management on gastric mucosal changes in two-year-old Thoroughbred horses in race training

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## Aim

Investigation of the feeding and housing management on gastric mucosal lesions in Thoroughbred horses.

## Material & Methods

31 two-year-old Thoroughbred horses were included in the study (Figure 1).



Figure 1: Experimental design

The study started 4-5 months after the beginning of the first year of training (T<sub>Start</sub>). A follow up was performed six months later (T<sub>End</sub>). The following analyses were carried out: Questionnaire about feeding and housing conditions; feed intake measurements and gastroscopy. Scoring of squamous mucosa on a scale from 0-4 was done according to the European Collage of Equine Internal Medicine. The glandular mucosa was scored on a scale from 0-4 as suggested by Vondran et al. (2016).

## Results

### Prevalence gastric mucosa lesions

#### T<sub>Start</sub>

**Squamous region:** 51.6% horses had a median gastric score > 2 (interquartile range [IQR] 1/3)

**Glandular region:** 32.2% horses had a median score > 2 (IQR 0/2)

#### T<sub>End</sub>

**Squamous region:** 51.6% horses had a median gastric score > 2 (IQR 1/2) (lesser curvature T<sub>Start</sub> vs T<sub>End</sub>: p = 0.002)

**Glandular region:** 41.9% horses had a median gastric score > 2 (IQR 1/2) (T<sub>Start</sub> vs T<sub>End</sub>: p > 0.05).

### Ethical animal research

The study was conducted in accordance with German legislation and ethical guidelines.

## Feed intake

Forage was given ad libitum in all stables. At T<sub>Start</sub> horses consumed a mean of 10.3 kg (min-max: 7 to 16 kg per day) of a forage-based feed. At T<sub>End</sub>, 9.9 kg (min-max: 5.5 to 12.8 kg per day) of a forage-based feed was fed. Only at T<sub>Start</sub> starch intake correlated with the maximum gastric lesion score of the Pars nonglandularis (Figure 2a) but starch intake was not correlated with the maximum score for the Pars glandularis (Figure 2b).

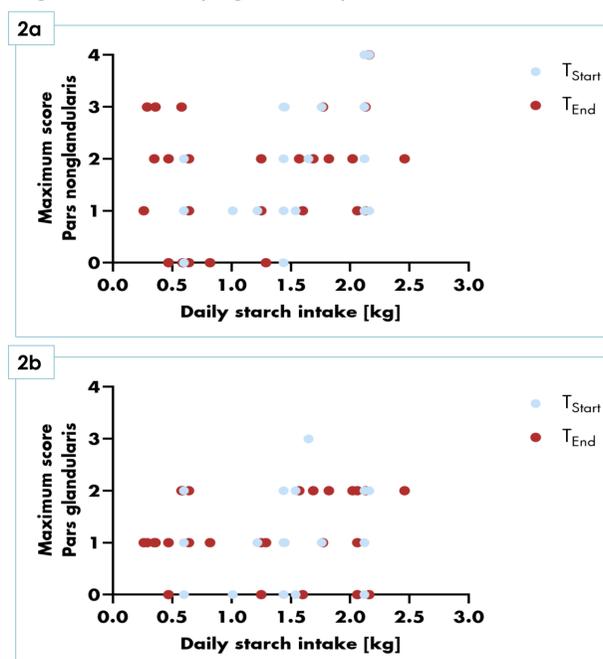


Figure 2: Maximum scores of the Pars nonglandularis (a) and Pars glandularis (b) in relation to starch intake

At T<sub>Start</sub>, all horses had access to a salt block and 12 horses (38.7 %) received additional electrolytes. At T<sub>End</sub>, 24 horses (77.4 %) had access to a salt block, none of the horses were additionally supplemented with electrolytes.

## Housing

Prevalence and severity of gastric ulcers did not differ between horses with regular access to a paddock or pasture (Figure 3).

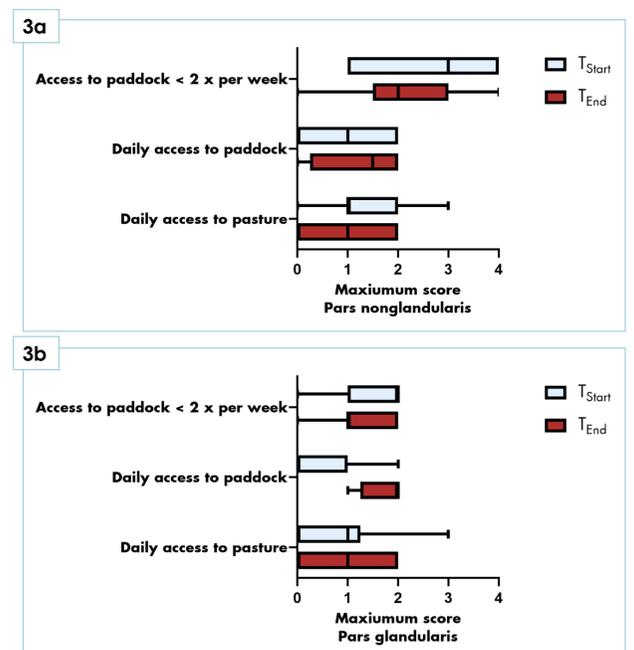


Figure 3: Maximum score Pars nonglandularis (a) and Pars glandularis (b) in relation to the housing management

## Racing and gastric mucosa lesions

13 from 31 horses were used in racing competitions at T<sub>End</sub>. Horses participated in races had higher gastric mucosa lesions scores in the squamous gastric mucosa (p = 0.0202).

## Relevance

Starch intake was lower in the 2-year old Thoroughbred horses than previously reported. In addition, daily minimum recommendation of forage intake (1.5-2 % of BW) was covered in all horses. Competitions presumably combined with increased training intensities had a greater influence on gastric mucosa than starch intake or access to a paddock or pasture.

## References

Sykes, B.W., et al., European College of Equine Internal Medicine Consensus Statement—equine gastric ulcer syndrome in adult horses. *Journal of Veterinary Internal Medicine*, 2015. 29(5): p. 1288.

Vondran, S., M. Venner, and I. Vervuert, Effects of two alfalfa preparations with different particle sizes on the gastric mucosa in weanlings: alfalfa chaff versus alfalfa pellets. *BMC Vet Res*, 2016. 12(1): p. 110.

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