**Crib-biting in foals is associated with gastric ulceration and mucosal inflammation**

A.J. Waters\*, C.J. Nicol\*, A.D. Wilson\*, P.A. Harris\*\* and H.B. Davidson\*\*

*\*Department of Clinical Veterinary Science, University of Bristol, Langford BS40 5DU, United Kingdom.
\*\*Equine Studies Group, Waltham Centre for Pet Nutrition, LE14 4RT, United Kingdom.*

Crib-biting is a stereotypic behaviour performed by approximately 5% of captive domestic horses. Risk factors for crib-biting, identified in recent epidemiological studies, include feeding high concentrate and/or low forage diets (Waters et al., 2002). Experiments have shown that such diets are likely to result in increased gastric acidity (Murray and Eichorn, 1996., Nadeau et al., 2000). We therefore propose that young horses initiate crib-biting in an attempt to produce alkaline saliva to buffer their stomachs when alternative opportunities for mastication are limited. The aim of this study was to determine whether there was an association between crib-biting behaviour and stomach condition in foals. Foals that had recently started to perform crib-biting were recruited into the study and compared with nonstereotypic foals. The stomachs of 15 crib-biting foals and 9 normal foals were examined using a video endoscope. Foals were then randomly allocated to a control or an antacid diet for a 3 month period. Behaviour was monitored by direct observation throughout the 3 month period, and foals re-endoscoped at the end. Videos were scored blind by an independent observer.

Crib-biting foals had significantly more inflamed, dry and ulcerated stomachs than normal foals on first examination (Mann-Whitney: U = 36; N1 = 15; N2 = 9; p < 0.05). Their stomachs also lacked normal folding on first examination, and were significantly smoother when re-examined (Mann-Whitney: U = 11.5; N1 = 12; N2 = 7; p < 0.01). Foals that received the antacid diet had fewer ulcers at the end of the trial (Mann-Whitney: U = 27.5; N1 = 13; N2 = 9). Most foals showed a reduction in crib-biting following treatment but the reduction was more pronounced in foals that received the antacid diet, and reduction in cribbiting correlated with reduction in ulceration (Rank correlation: r = 58; N = 12; p = 0.05). We suggest that the stomachs of crib-biting foals were exposed to more acid conditions or were more sensitive to normal acidity levels than the stomachs of normal foals. The results of this study support the hypothesis that the initiation of oral stereotypy can be a response to a disturbance of the normal digestive process.

**References**
Murray, M.J. and Eichorn, E.S. (1996) Effects of intermittent food deprivation, intermittent food deprivation with Ranitidine, and stall confinement with free access to hay on gastric ulceration in horses. Am. J. Vet. Res. 11, 1599 - 1603.
Nadeau, J. A., Andrews, F.M., Mathew, A.G., Argenzio, R.A., Blackford J.T., Sohtell M., Saxton A.M. (2000) Evaluation of diet as a cause of gastric ulcers in horses. Am. J. Vet. Res. 61, 784 - 790.
Waters, A.J., Nicol, C.J. and French, N.P. (2002) Factors influencing the development of stereotypic and redirected behaviour in young horses: the findings of a four year prospective epidemiological study. Eq. Vet. J. (in press).