Experiment 8

Blumerich, C.A., Buechner-Maxwell, V.A., Scrratt, W.K., Wilson, K.E., Ricco, C., Becvarova, I., Hodgson, J. and Were, S. (2012) Comparison of airway response of Recurrent Airway Obstruction affected horses fed steamed versus noon-steamed hay. *Proceedings of the Annual ACVIM Conference, 2012.*

Introduction: Recurrent Airway Obstruction (RAO)-affected horses experience bronchoconstriction and airway inflammation in response to inhalation of aerosolized irritants including hay molds. Steaming hay reduces fungal content, but the effect on the antigenic potential of hay has not been investigated. The aims of this experiment were to test the hypothesis that RAO-affected horses develop less clinical disease when fed steamed versus non-steamed hay and this reduction coincides with decreased hay fungal content.

Method: Six RAO-affected horses in clinical remission were divided into two groups and fed *ad libitum* steamed or non-steamed alfalfa hay for 10 days using a two-way cross-over design. All horses had *ad libitum* access to water and a mineral lick throughout the duration of the trial. Hay was steamed using the HG 1000 (Haygain Ltd). Clinical assessment was performed daily. Full assessment performed on days 1, 5 and 10, included upper airway endoscopy, assignment of mucous scores and measurement of maximal change in pleural pressure. Bronchial fluid sampling and cytology were performed on days 1 and 10. Hay core samples were collected pre- and post-steaming and cultured to determine fungal and bacterial concentrations. Differences between treatments were determined using repeated measures ANOVA, mixed model ANOVA, Wilcoxon rank-sum and Wilcoxon two sample tests.

Results: Steaming significantly decreased the number of fungi colony forming units in hay. Horses fed non-steamed hay experienced a significant increase in clinical score ($p<0.0001$) and a trend towards total airway neutrophilia ($p=.0834$) during the feeding period, while parameters were unchanged in horses fed steamed hay.

Conclusions: These results indicate that steaming reduces the RAO-affected horse's response to hay which coincides with a reduction in viable fungal content of hay.