



16th WEVA

World Equine Veterinary Association Congress

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RESPIRATORY METABOLITES IN BRONCHOALVEOLAR LAVAGE FLUID (BALF) AND EXHALED BREATH CONDENSATE (EBC) OF HEALTHY HORSES AND HORSES AFFECTED BY EQUINE ASTHMA

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Purpose of the work - About 14% of adult/old horses naturally develop an asthma-like disease known as equine asthma¹. Metabolomics is gaining popularity in human and veterinary medicine^{2,3}.

The metabolomic profile of exhaled breath condensate (EBC) and tracheal wash (TW) was investigated in horses⁴. In this study, we investigated the metabolomic profile of EBC and bronchoalveolar lavage fluid (BALF) in healthy and asthma-affected horses.

Materials and used methods - On the basis of clinical, endoscopic findings and BALF cytology, 6 horses were included in asthma group (Group A), 6 horses were included in control group (Group C). BALF and EBC samples were collected as described previously^{4,5} and stored at -80°C until analysis by 1H-NMR⁶. The F-test was used for statistical analysis.

Results - 1H-NMR identified 12 metabolites in BALF: formate, lactate, myo-inositol, glycerol, glycine, taurine, creatine, succinate, pyruvate, acetate, ethanol and isopropanol. Metabolites in EBC included methanol, ethanol, formate, trimethylamine, acetone, acetate and lactate. Among respiratory metabolites, myo-inositol, formate, glycerol and isopropanol in BALF, methanol and ethanol in EBC differed between groups ($p < 0.05$).

Conclusions - The analysis of BALF performed in this study completes the metabolomic profile of respiratory system⁴ in healthy and asthma-affected horses. In BALF, Group A had lower levels of myo-inositol, a metabolite that promotes maturation of pulmonary surfactant and supports respiratory function⁷. In EBC, higher methanol was found in Group A, indicating an active inflammatory status^{4,8}. Considering our results, metabolomics has a great potential to better explain the pathophysiology of equine asthma, allowing researchers to adopt novel diagnostics and therapeutic strategies to treat the disease.

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