

## L9

## Orally administered T-2 and Fumonisin B1 affects cation exchange of rabbit erythrocytes

András Szabó<sup>1\*</sup>, Judit Szabó-Fodor<sup>2</sup>, Hedvig Fébel<sup>3</sup>, Róbert Romvári<sup>4</sup>, Melinda Kovács<sup>2</sup>

<sup>1</sup>Kaposvár University, Faculty of Agriculture and Environmental Sciences, Department of Food Development and Bioanalytics, Kaposvár, Hungary;

<sup>2</sup>MTA-KE Mycotoxins in the Food Chain Research Group, Kaposvár, Hungary;

<sup>3</sup>Research Institute for Animal Breeding, Nutrition and Meat Science, National Agricultural Research Center, Herceghalom, Hungary;

<sup>4</sup>Kaposvár University, Faculty of Agriculture and Environmental Sciences, Kaposvár, Hungary

\* Corresponding author: szabo.andras@ke.hu

Pannon White weaned rabbits were fed on diets artificially complemented with 2 mg/kg diet T-2 toxin, or 10 mg/kg diet fumonisin B1 (FB1), and both toxins in a combination (2+10 mg/kg, resp.). The control was fed on a toxin free, fully identical diet. Blood was sampled after 2 and 4 weeks of administration. Body and liver weight of the T-2 group was lower after 4 weeks. After full red cell lysis in a hypotonic buffer cellular membranes were isolated with centrifugation (30000 g/10 min) and the cation transport was implemented as the breakdown of ATP in the absence and in the presence of a selective sodium pump inhibitor, ouabain. Results were interpreted as the difference between the inhibited and non-inhibited treatments, and were given as liberated inorganic phosphate (nmol Pi/mg protein/ h.) The red blood cell (RBC) total, ouabain sensitive Na<sup>+</sup>/K<sup>+</sup> ATPase activity decreased after 4 weeks in the T-2 group, increased in the FB1 group and antagonistic effect was revealed by the T-2+FB1 group (enzyme activity identical with the control). The RBC membrane fatty acid composition was altered by both mycotoxins similarly during the entire feeding. Considering hematology, after 4 weeks T-2 alone and in combination with FB1 increased mean cell volume (MCV). Time-dependent alterations in the T-2 group were significant for MCV and the mean cell hemoglobin, both parameters increasing. The active monovalent cation transport was significantly influenced by both T-2 and FB1 as well. Most probably FB1 exerts its sodium pump activity modification via an altered ceramide metabolism (behenic acid (C22:0) proportional decrease in the RBC membrane composition), while for T-2 toxin a moderate membrane disruption and enzyme (protein) synthesis inhibition was supposed (ca. 75% decrease of the ouabain sensitive sodium pump activity).

The research was supported by the Hungarian Academy of Sciences (MTA-KE “Mycotoxins in the food chain” Research Group) and by the Bolyai János Research Grant (BO\_499\_13 to J. Sz-F.).