MONITORING OF BIOCHEMICAL PARAMETERS IN THE AGING PROCESS IN NORIK MURÁŇ TYPE

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INTRODUCTION

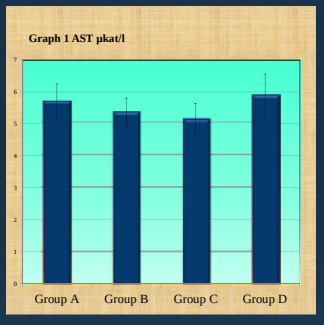
The aging process is associated with changes in the physiology of many organs and tissues. The aging process can cause metabolic changes, regardless of the presence or absence of disease, the potential effects on the interpretation of clinical data in the aging animal.

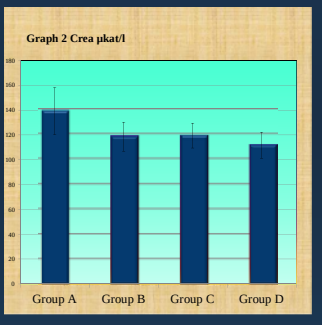
Biochemical analysis in the horses are important in determining correct clinical diagnosis overall, certain infectious and parasitic diseases. It is important to determine the optimal treatment according to severity and the overall effects of the disease.

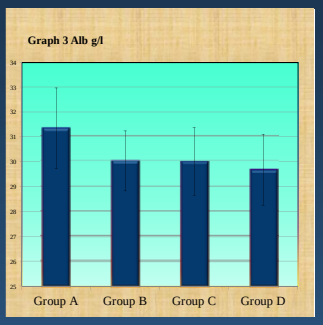
Despite the widespread use of biochemistry in veterinary medicine for horses, in some cases interpretation can be problematic because it is significantly affected by many factors. Although the reference range of biochemical parameters in horses is relatively broad, physiological tolerances for certain breeds are usually quite restricted. Biochemical parameters may vary depending on breed, sex, age, reproductive status and level of training and feeding. Biochemical data for some specific breeds of horses are available, but no data were published for the breed Norik Muráň type.

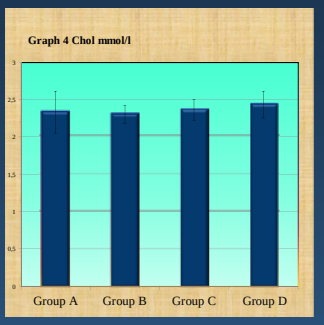
The aim of the study was to compare some biochemical parameters in the aging process in a cold-blooded mares of breed Norik Muráň type.

Keywords: biochemical parameters, cold-blooded mares, Norik Muráň type, horses, aging









METHODS & MATERIALS

In this study were used 27 breeding mares of Norik Muráň type without pathological symptoms from horse breeding farm in Dobšiná (Slovakia). Mares were divided by age into four groups: A (n = 7, 5-8 years), B (n = 6, 9-15), C (n = 7, 16-20) and D (n = 7, 21-23). Blood samples were collected from *v. jugularis externa* by needles (Vacutainer ® Precision Glide ™, BD Diagnostics, USA) in serum tubes (Serum-SST TM II Advance, BD Diagnostics, USA) in the morning hours, kept at 8 to 10 °C and analyzed as soon as possible. Biochemical parameters of blood serum like aspartate aminotransferase (AST), alkaline phosphatase (ALP), creatinine (Crea), total protein (TP), albumin (Alb), gammaglutamyl-transferase (GGT) and cholesterol (Chol) were analyzed using biochemical analyzer Cobas c 111 (Roche, Switzerland).

Reference values were determined by Laboratory of Clinical Biochemistry and Haematology (UVMF, Košice). All mares were feed with the same diet. The results were statistically processed using Student's t-test.

RESULTS

The concentrations of AST (Graph 1) decreased in mares with aging (A=5.69 ± 1.13 µkat/l; B=5.36 ± 0.9 µkat/l; C=5.13 ± 1.1 µkat/l), but in the oldest mares (D=5.88 ± 1.37 µkat/l) were higher than the youngest age group A. It was found no significant differences between groups (P> 0,05).

The concentrations of ALP increased with age (A=2.47 ± 0.3 µkat/l; C=2.66 ± 0.43 µkat/l; D=2.77 ± 1.17 µkat/l), but in the middle age mares were found (B= 2.44 ± 0.46 µkat/l) (P> 0,05).

Concentration of GMT was maintained at the same level in all age groups (A 0.28 ± 0.05 µkat/l, B 0.29 ± 0.03 µkat/l, C 0.25 ± 0.04 µkat/l, D 0.29 ± 0.15 µkat/l).

Crea concentrations had a decreasing trend (A=139.1 ± 37.49 µmol/l; B=118.45 ± 23.18 µmol/l; C=119.31 ± 19.85 µmol/l; D=111.59 ± 21.08 µmol/l) (P> 0,05), as well as albumin (A 31.34 ± 3.24 g/l, B 30.03 ± 2.41 g/l, C 30 ± 2.77 g/l, D 29.67 ± 2.85 g/l), and total protein (A 70.07 ± 5.29 g/l, B 65.87 ± 7, 78 g/l, C 63.96 ± 6.59 g/l), but in the oldest age group increased (D 67.41 ± 8.2 g/l).

With aging the concentration of cholesterol elevated (A 2.33 ± 0.56 mmol/l, B 2.3 ± 0.25 mmol/l, C 2.36 ± 0.29 mmol/l, D 2.43 ± 0.37 mmol/l) (Table 1).

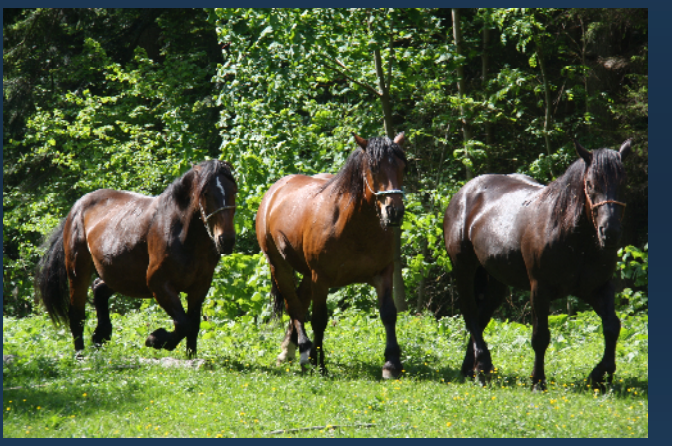


Table 1								
Age. gr	**A (n=7)**		**B (n=6)**		**C (n=7)**		**D (n=7)**	
Bio. par.	**x**	**±SD**	**x**	**±SD**	**x**	**±SD**	**x**	**±SD**
AST µkat/l	5,69	1,13	5,36	0,9	5,13	1,1	5,88	1,37
ALP µkat/l	2,47	0,3	2,44	0,46	2,66	0,43	2,77	1,17
GMT µkat/l	0,28	0,05	0,29	0,03	0,25	0,04	0,29	0,15
Crea µmol/l	139,1	37,49	118,45	23,18	119,31	19,85	111,59	21,08
TP g/l	70,07	5,29	65,87	7,78	63,96	6,59	67,41	8,2
ALB g/l	31,34	3,24	30,03	2,77	30	2,77	29,67	2,85
Chol mmol/l	2,33	0,56	2,3	0,25	2,36	0,29	2,43	0,37

Table N. 1 Biochemic parameters of Norik muráň type in different age groups (A, B, C a D). Mean value (x) and standart deviation (±SD).

CONCLUSIONS

This research evaluated selected biochemical parameters of mares breed Norik Muráň type of different ages. We found that age affects these parameters in mares Norik Muráň type. Data from this study may enhance our understanding of the biochemical parameters in this species, allowing a veterinarian to fix the interpretation of laboratory data and give these animals the appropriate care.

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