

## MANGANESE, MOLYBDENUM AND IRON CONCENTRATION IN SERA IN-CALF AND MILK COWS UNDER THE INFLUENCE OF DIFFERENT FACTORS

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**Summary.** Deficiency of cobalt, copper, iron, iodine, manganese, selenium, or zinc can cause a reduction in production. The purpose of this study was to evaluate the changes of the levels of manganese, molybdenum and iron in sera of in-calf and milk cows. The levels of microelements were examined in 520 sera samples. Direct analysis method (Schlemmer, 1989) for determination of trace elements (manganese, molybdenum, iron) concentration in cattle serum was applied. The electro-thermal graphite furnace atomic absorption spectrophotometer (HGA-600, AS-60) with Zeeman background correction Zeeman-3030 (Perkin-Elmer, USA) was used.

Manganese concentration in blood serum ranged from 0.4 to 1.0  $\mu\text{mol/l}$ . The level of manganese in cows sera markedly decreased after parturition. The median manganese concentration of summer blood was significantly higher compared to manganese concentration of autumn and spring blood. Levels of manganese were negatively related to the daily milk yield. The blood serum levels of manganese changed depending on age of animals: the blood serum level of microelements were significantly lower in cows 6-8 years old compared to 3-5 years old cows and heifers.

Molybdenum concentration in blood serum ranged from 1.7 to 3.6  $\mu\text{g/l}$ . The molybdenum level in blood decreased in cows at the end of pregnancy and after parturition. In the blood of high productivity cows the level of molybdenum was significantly lower. The median molybdenum concentration change in autumn, summer and spring were not significant.

The blood level of iron ranged from 20.8 to 32.1  $\mu\text{mol/l}$ . The iron level in blood decreased in cows at the end of pregnancy and after parturition and in sera of high productivity cows. The median iron concentration of spring blood was significantly lower compared to the iron concentration of summer blood. The blood serum level of iron in 3-6 years old cows was significantly lower compared with heifers.

**Keywords:** blood sera, manganese, molybdenum, iron, cows.