

Animal welfare, etológia és tartástechnológia



Animal welfare, ethology and housing systems

Volume 9

Issue 3

Különszám/Special Issue

Gödöllő

2013

Influence of smoking on selected metals and antioxidants in breast milk

GOC Z., KILIAN K., STAWARZ R., FORMICKI G., SZAROMA W., GREŃ A., KAPUSTA E.

Institute of Biology, Pedagogical University of Cracow,
Podbrzezie 3, 31-045 Cracow, Poland

Abstract

The aim of the study was comparison of selected breast milk parameters taken from smoking and non-smoking mothers, being in different age. Concentrations of calcium, mercury, and glutathione (GSH) were measured in milk samples. Also activities of superoxide dismutase (Cu/Zn-SOD), were fixed. Breast milk samples were collected in the morning hours from women were between 20 and 37 years old, living in Cracow in Lesser Poland. All samples were divided in accordance with women' age and smoking addict. According to their age status, 90 mothers were classified into three groups of age: 20-25, 26-31 and 32-37 years. Samples were taken from the selected women between 4th and 14th day postpartum (transitional milk). Results indicate that mercury was present in all analyzed milk samples and its concentrations were higher in milk samples taken from smoking women than taken from non-smoking in all age groups. Mercury concentration in milk samples of smoking women was lower than in milk samples taken from elder women. This fact suggests that smoking can affect mechanisms of detoxification and mercury excretion into breast milk. Mean calcium level was the highest in milk samples taken from smoking mothers in age of 32-37 years old and the lowest level was observed in milk from youngest women. Smoking habit did not have influence on calcium concentration in milk.

Differences between superoxide dismutase (Cu/Zn-SOD) activity and glutathione (GSH) level in milk samples taken from smoking and samples taken from non-smoking women were statistically insignificant in all age groups. This fact suggests that antioxidant properties of milk are always stable and independent of women' age and cigarette smoking.