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EFFECT OF SMOKING ON CONCENTRATIONS OF CADMIUM, COPPER, IRON AND ZINC IN EARLY TRANSITIONAL HUMAN MILK

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ABSTRACT

Introduction: The effect of smoking on the concentrations of metals (Cd, Cu, Fe, Zn) in breast milk of active smokers and women environmentally exposed to tobacco smoke was assessed.

Methods: Supernatants of breast milk were analysed after centrifuge at 10 000×g and 105 000×g. Metals (Cd, Cu, Fe, Zn) were determined in breast milk supernatants by a graphite furnace atomic absorption spectrometry (GFAAS), equipped with a graphite cuvette, model Ph 9100 X, Philips Co. The concentration of cotinine was measured by the ELISA test, and protein according to the method of Lowry.

Results: The study showed that the concentrations of nicotine metabolite and Cd were respectively three and four times higher in breast milk of active smokers than in passive smokers. There were no statistically significant differences in the concentrations of essential metals (Cu, Fe, Zn) in early transitional breast milk between both examined groups.

Conclusions: Cigarette smoking by a breast-feeding mother contributes to a fourfold increase in the risk of infant’s exposure to cadmium via digestion. Cigarette smoking did not influence the concentrations of essential metals (Cu, Fe, Zn).

Keywords: trace elements, human milk, smoking, cotinine

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