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**Total antioxidant status of human colostrum, transitory milk and mature milk in healthy postpartum women from coastal Croatia**

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Purpose: Health risk of exposure to three major toxic metals Cd, Pb and Hg were assessed in healthy breastfeeding women aged 29.5±4.9 (19-44 yrs) who gave birth during 2012/13 in the maternity ward of General County Hospital in Zadar, the largest city in mid-coastal Croatia. Data on smoking and dietary habits (with focus on seafood consumption) by self-ascertainment and stated number of amalgam dental fillings as sources of toxic metal exposure were collected by questionnaire. Metal levels in maternal blood and breast milk samples (elements were analysed by ICP-MS) served as biomarkers of exposure. As biomarkers of toxic metal effects, we measured total antioxidant status (TAS) in breast milk samples (in total N=147) of three lactation stages: colostrum (up to day 4), transitory milk (between days 5 and 14) and mature milk (between days 20 and 30 postpartum) by Antioxidant Assay Kit (Cayman Chemical Company, USA) based upon the ability of antioxidants to inhibit the oxidation of ABTS.

Results: Maternal cigarette smoking was positively correlated with Cd concentrations in maternal blood and mature milk and Pb in transitory milk. Positive correlations were also found between seafood consumption and total Hg in maternal blood and mature milk and between the number of maternal amalgam dental fillings and total Hg in colostrum and transitory milk. Values of TAS (expressed in mmol/L of Trolox equivalents) determined in colostrum, transitory milk and mature milk samples were: 1.35±0.74, 1.49±0.79 and 1.48±0.80.

Conclusions: The absence of differences in TAS values between different breast milk types in relation to maternal smoking and dietary habits suggest that exposure to potential oxidative agents, including three main toxic metals, in the study cohort did not reach levels to disrupt the protective antioxidant capacity of breast milk, which might point to possible health risks in postpartum women and their progeny.

Keywords: total antioxidant status (TAS), cadmium, lead, mercury, human breast milk, lactation stages, cigarette smoking, dietary habit