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Evaluation of some Heavy metals in the Women Milk and some Hormonal changes in Al- Muthanna Province

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Summary

The objective of this study was to investigate Pb, Cd, Hg, Cr, As and Ni levels in the breast milk of lactating healthy women who were living in Al Muthanna province of Iraq and to determine the relationship between these metals and selected parameters, such as: location, mother's age, serum prolactin PRL hormone and thyroid hormone (thyroxin T4 and triiodothyronine T3).

Seventy breast milk and blood samples collected from October 2012 to March 2013 from healthy lactating women at different stages of lactation, from 5 days to 72 weeks postpartum in morning. The breast milk samples were collected by self-milking. Pb, Cd, Hg, Cr, As and Ni in milk samples were measured by flam atomic absorption spectrometry while Hg concentration was determined by cold vapor atomic absorption spectroscopy. Blood samples were examined by Elisa to determine the levels of PRL, T4 and T3.

The mean ± SD of Pb, Cd, Hg, Cr, As and Ni concentrations in human milk were 6.81 ± 1.31 μg/dl , 0.50 ± 0.15 μg/dl, 0.53 ± 0.20 μg/dl, 5.00 ± 0.72 μg/dl, 0.54 ± 0.21 μg/dl, 7.12 ± 0.67 μg/dl, respectively.

The concentration of Pb, Cd, Hg, Cr, As and Ni were (7.07, 0.62, 0.71, 5.56, 0.72, 7.65 in μg/dl), respectively in urban areas were higher than The concentration of Pb, Cd, Hg, Cr, As and Ni (5.87, 0.39, 0.36, 4.43, 0.37, 6.59 in μg/dl), respectively in rural areas at ($P < 0.05$).

The concentration of Pb, Cd, Hg, Cr, As and Ni were (6.28, 0.45, 0.49, 4.79, 0.48, 6.94 in μg/dl), respectively in women aged < 25 years lower than the concentration of Pb, Cd, Hg, Cr, As and Ni (7.33, 0.55, 0.58, 5.20, 0.61, 7.30 in μg/dl), respectively in women aged ≥ 25 years, This difference was statistically significant for heavy metals except Hg ($P < 0.05$).

Serum PRL level in ng/ml was (55.74 ± 40.91) was positively associated with heavy metals .Correlation was non-significant for all heavy metals. Serum T4 level in μg/dl was (8.27 ± 3.46) was inversely significantly association to heavy metals at ($P < 0.01$), while, T3 level in ng/ml was (1.97 ± 1.06) was positive significantly association to heavy metals at ($P < 0.01$).

Considering the high levels of heavy metals in breast milk in it is important to apply direct strategies and solutions of this study, protection against contaminants in order to reduce their levels in biological fluids.