Measurement of lead concentration in powder milk and baby weaning food by DPASV

Mohammad Reza OVEISI1, Naficeh SADEGHI1, Behrooz JANNAT2, Mannan HAJIMAHA MOODI1, Abdolazim BEHFAR3, Masoomeh BEHZAD1, Behzad JANNAT4, Narges NOROUZI1

1Department of Drug and Food Control, School of Pharmacy, Tehran University of Medical Sciences, Iran,
2Halal Research Center, Food and Drug Organization, Ministry of Health and Medical Education, Iran,
3Food Sciences and Medical Hydrology Department, School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Iran
4Azad University, Iran

Introduction:
Apart from the breast milk, infant formula and baby weaning food have special role in infant diet after six month. Lead is a heavy toxic metal that enter to food chain unavoidably. Infants and young children are the most risky group to this metal. The aim of this study is to determine the concentration of lead in brands of powder milk and baby weaning food.

Materials and methods:
Infant formula (n=240) and baby weaning foods (n=240) based on rice and wheat were prepared from market in Tehran, Iran. Due to the complex composition of the samples, the concentration was determined using the standard addition technique by Differential pulse anodic stripping voltammetry (DPASV) method.

Results:
Total Mean ± SE of lead in wheat (n = 120), rice (n = 120) baby foods, powder milk A(n = 120) and B(n = 120) were 0.07 ± 0.01, 0.02 ± 0.01, 0.01 ± 0.00 and 0.05 ± 0.00 mg/kg respectively. Totally 0.445 ± 0.006 and 0.007 ± 0.003 mg/kg in baby foods and powder milks. In each four products, level of lead was lower than the standard limit (P < 0.05). Amount of lead in wheat baby food had difference versus other products. Concentration of lead in rice baby food was higher than infant formulas, but are in standard limit (0.2 mg/kg).

Conclusion
The result of this study shows that toxic heavy element of Pb in baby weaning food and infant formula samples in Iran, are within safety limits. But it seems that there is need to good quality control periodically.