

PLENARY LECTURE

**OCCURRENCE AND INFANT EXPOSURE ASSESSMENT OF CHEMICAL  
CONTAMINANTS IN BABY FOODS**

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The use of chemicals has increased dramatically due to the economic development in various sectors including industry, agriculture and transport. Therefore, the significance and potential health risk of any contaminant in foods consumed by infants is increased and diligent attention must be paid to this particular area.

Infants and children are potentially more vulnerable to the effects of ingesting chemical hazards, owing to still developing organ systems and higher exposure. Children consume more food per unit of body weight than adults. Moreover, developing organs and tissues are more susceptible to the toxic effects of certain chemicals. Symptoms related to prolonged low-level exposure may not be apparent until later in life and, when they do occur, may be chronic and irreversible. Serious illness due to long-term exposure to various toxic chemicals may include damage to the immune and nervous systems, impairment of reproductive function and development, congenital anomalies in the offspring, cancer, and organ-specific damage.

Food safety is a concern for parents of infants, and healthcare professionals are often questioned by them about this topic. The strict regulations and measures applied in European countries mean that food is generally safe, but ingestion of contaminated food may still present an important route of exposure to chemical hazards. Industrially produced food is an important part of the diet for many infants and toddlers in developed countries. Baby foods have special functions to play in diets of infants because they are major source of nutrients and a unique source of food during the first months of their life.

Results from a recent survey study on chemical contaminants in 176 baby foods both sold as conventional and organic origin (dinners and soups, apple based-juices and purees, infant cereals and infant formula) marketed in Lisboa city, Portugal, during 2007-2008 will be presented and discussed. Mycotoxins (aflatoxins, ochratoxin A and patulin), nitrates and heavy metals were determined by high performance liquid chromatography, atomic absorption spectrometry and direct mercury analysis.

Analytical methods were all validated prior to baby food analysis. Data on the occurrence of food contaminants were compared with legislated values and infant exposure assessment performed. Considering the absence of consumption data regarding Portuguese infants and young children, the estimated intake of food contaminants through the consumption of commercial baby foods was calculated using consumption information provided by the DONALD (Dortmund Nutritional and Anthropometrical Longitudinally Designed) study. Further studies on the interactive effects of mixtures of food contaminants as well as its toxicokinetics will be reported in order to contribute to risk assessment of children to chemical food contaminants.