

Korean Research Project on the integrated Exposure Assessment to Hazardous Materials for Food Safety (2010)

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Background and Aims: "Korean Research Project on the Integrated Exposure assessment to hazardous Materials for Food Safety (KRIEFS)" is established by National institute of Food and Drug Safety Evaluation(NiFDS) in March 2010, this project has been operating for three years(2010-2012). This is a representative and nationwide bio-monitoring project for environmental exposure and human health in Korea, particularly focused on the exposure from foods and health supplements and herbal medicines. This project is gathering integrated data of exposure to hazardous materials (1st year: Cadmium, Lead, Mercury, Methyl Mercury, 2nd year: Phthalate, Aflatoxine, Bisphenol A, 3rd year: integrated analysis, survey High-risk groups) through simultaneous inspection of food and bio samples(blood, 12hours and spot urine) against representative population - adults, infants, children and teenager, total 4000 people- and identifying hazardous materials exposure history in more comprehensive method, in order to protect public from exposure to hazardous materials through food, herbal medicine and health supplements food.

Methods: Sample design-This project is a nationwide population survey. Selected sample groups are representative with regard to age, gender, region (urban/rural). Samples were selected from the whole nation in 6 provinces (do), except Jeju-do. (Include Seoul, Gyeonggi, Gangwon, Chungcheong, Jeonra, Gyeongsang). Sample group's ages are from infant(include mother), schoolchild (elementary, junior, high) to adult. The total number of samples are more than 4000 over 2 years.

Survey-This project has 4 categories of survey; first, Investigating concentration of hazardous materials in foods, health supplements and herbal medicines; second, dietary intake survey, third, human biomonitoring of exposure and health effect(questionnaires, clinical test, blood, 12hours and spot urine); fourth, analyzing of hazardous chemicals in food, herbal medicine and health supplements food. And residual components among the chemicals in body.

Results: In 2010 survey, we investigated concentration of heavy metals (Cadmium, Lead, Mercury, Methyl Mercury) in foods (total 3,820 samples from 7 metropolises in the nationwide), health supplements and herbal medicines (total 679 samples from survey targeted groups), and surveyed dietary intake survey and human biomonitoring of exposure and health effect. (total 2032 samples, infant 267, infant's mother 271, schoolchild 498, and adult 996) and analyzing of lead in food and residual components in body.

The average blood lead levels of adult is 1.29 µg /dL, according to sex, age, region can see that men (women 1.15 µg /dL, men 1.55 µg /dL), older age groups (18-29; 0.79 µg /dL 60+; 1.7 µg /dL), smaller towns (1.45 µg /dL, metropolis 1.12 µg /dL) tend to have greater level in lead.

Conclusions: This project is a representative and nationwide bio-monitoring project for environmental exposure and human health in Korea, particularly focused on the exposure from foods and health supplements and herbal medicines. In 2010 survey, we investigated concentration of heavy metals (Cadmium, Lead, Mercury, Methyl Mercury) in foods, health supplements and herbal medicines and surveyed dietary intake survey, human biomonitoring of exposure and health effect. and analyzed lead in food and residual components in body.

The average blood lead levels of adult can see that man, older age groups, and smaller town's trend to have greater level in lead.

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