

Accumulation of Persistent Endocrine Disrupters (organochlorine pesticides and PCBs) in Foodstuffs and Human Tissues from Shanghai, China

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Concentrations of persistent endocrine disrupters (organochlorine pesticides) such as DDTs, hexachlorocyclohexane (HCHs), chlordane compounds (CHLs), hexachlorobenzene (HCB) and polychlorinated biphenyls (PCBs) were determined in a wide variety of foodstuffs and human tissues collected from Shanghai and its vicinity, China in 2000/2001. Among the organochlorines analysed, DDT and its metabolites are prominent compounds in most of the foodstuffs. In particular, mussels contained noticeable levels of DDTs (34,000 ng/g lipid wt.), which is one to three orders greater than those reported levels in bivalves of other Asian countries. Concentrations of HCHs, CHLs, HCB and PCBs in most of foodstuffs were relatively low, suggesting their small amounts of recent inputs in the environment. Temporal trends examined by comparing the results of previous studies of organochlorine levels in Chinese foodstuffs in 1970s and 1992 revealed a greater rate of declines of DDTs and HCHs residues and the average daily intakes during the past thirty years. In contrast, very high concentrations of DDTs and HCHs were detected in human tissues from China, with the maximum values as high as 19,000 ng/g lipid wt. (mean: 7,600 ng/g) and 17,000 ng/g (mean: 7,400 ng/g), respectively. These facts suggest that Chinese is still experiencing both severe contamination of DDTs and HCHs, although the residue levels in foodstuffs are relatively low. Considering that foodstuffs are a main source of human exposure to contaminants, the greater concentrations of DDTs and HCHs in Chinese are arising from the past extensive use of these pesticides for agriculture in this country. Continuous monitoring and epidemiological studies of organochlorine pesticides in humans are necessary in China. To our knowledge, this is the first report to present the residue levels of persistent organochlorines in the tissues of Chinese.