Chemosphere. 2003 Jul;52(1):213-9.

Effects of dietary habits and CYP1A1 polymorphisms on blood dioxin concentrations in Japanese men.

Tsuchiya Y, Nakai S, Nakamura K, Hayashi K, Nakanishi J, Yamamoto M.

Department of Community Preventive Medicine, Niigata University Graduate School of Medical and Dental Sciences, 1-757, Niigata 951-8510, Asahi-machidori, Japan. troof@med.niigata-u.ac.jp

Abstract

The major source of dioxin impurities in Japan in the past was agrochemical formulations; more recently, it has been exhaust from waste incinerators. To examine the environmental and genetic factors that influence blood dioxin concentration, we investigated the relationship among dioxin concentrations, dietary habits and cytochorome P450 1A1 (CYP1A1) polymorphisms (MspI type and Ile-Val type) in Japanese fishermen and farmers, including also a group of office workers as controls. The mean dioxin concentrations in the fishermen, the farmers and the controls were 161369, 79079 and 100500 pg/g fat, respectively. The elevated dioxin concentration with polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans and coplanar-PCBs found in the fishermen may be due to the frequent consumption of fish; no such relationship was found both in the farmers and the controls. We found that the concentrations of congeners found as impurities in certain chemicals such as those previously used in agriculture showed no significant differences among the three groups; we consider it unlikely that the farmers would be directly exposed to dioxins from such chemicals. Thus, it is probable that the primary route of dioxin exposure in the Japanese population is through the food chain via fish consumption, regardless of occupation. No meaningful relationship between blood dioxin concentration and CYP1A1 polymorphisms was found in this study, although there was a significant difference between the concentration of total non-ortho-PCBs in genotypes A and B. Further studies on more subjects, including those of genotype C, are needed to confirm the relationship between blood dioxin concentrations and MspI polymorphisms.

PMID: 12729704 [PubMed - indexed for MEDLINE]