

Estimating the Total TEQ in Human Blood from Naturally-Occurring vs. Anthropogenic Dioxins: A Dietary Study

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Introduction

Numerous naturally-occurring compounds in the human diet can bind to the aryl hydrocarbon, or *dioxin* receptor (AhR) and activate the AhR signaling pathway¹. These compounds include certain indole carbinols and their derivatives, heterocyclic aromatic amines, flavonoids, carotenoids, vitamin A derivatives (retinoids), and tryptophan metabolites. Several researchers have suggested that the daily dietary intake of these “endodioxins”, in terms of a TCDD-equivalency (TEQ) is likely to be far greater than that associated with daily background intake of anthropogenic dioxins²⁻⁵. For example, Connor and Finley³ estimated that the daily TEQ dose of indolo[3,2-*b*]carbazole (ICZ), an indole carbinol formed from compounds in cruciferous vegetables, is likely to be over 10,000-fold greater than the daily dietary TEQ dose associated with the background intake of PCDD/Fs and PCBs. Further, when TEQ doses were expressed as accumulated body burdens or area-under-the-curve doses, which accounted for different biological half-lives, ICZ still constituted >95% of the total (internal) TEQ dose.