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1. 947-3 Env. Pharm. & Tox.
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Is first author graduate student? Yes No

METHANOL NEUROPATHY: A HISTOLOGICAL STUDY ON LONG-EVANS RATS. M. Hoque, W.C. Monte, and C.S. Johnston. Food and Nutrition laboratory, Arizona State University. Tempe; AZ 85287

Methyl alcohol (methanol), a highly toxic substance, is in food products containing the artificial sweetener, aspartame. Since aspartame is a very popular artificial sweetener, a large segment of our population is currently consuming chronic, low doses of methanol. This study examined the neurotoxic effect of methanol on the central nervous system of rat pups. Methanol was administered daily by the gavage technique to 20 female Long-Evans rats (1.28 g/kg body weight) beginning two weeks prior to mating and throughout gestation and lactation. A control group of ten female rats received same volume of distilled water. Prenatal methanol exposure induced brain defects (hydrocephalus), eye defects, spina bifida occulta, and stillborn pups. All experimental pups showed massive axonal degeneration in multiple regions of brain. Histological examination of the brain using reduced silver staining techniques, revealed massive fiber degeneration of the cerebellar cortex, deep cerebellar nuclei, and cranial nerve nuclei. Additional regions of axonal degeneration were found in the hippocampus, corticospinal tract and optic chiasm. These results show that by using sufficiently sensitive neurohistological technique, the neurotoxicity of methanol is revealed in the mammalian central nervous system. Although the daily dosage used in this study is high (approx. equivalent to 3 liters of an aspartame-sweetened beverage), pregnant or lactating women, should limit consumption of aspartame-sweetened food products.

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All compounds that are designated by code or initial letters in the title must be identified adequately in the abstract, e.g., MJ-1999; 4-(2-isopropylamino-1-hydroxyethyl) methanesulfonamide hydrochloride.

All investigators must adhere to the guidelines as listed on the reverse of the abstract form.

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Carol S. Johnston, Ph.D.

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