A Note on the Biotransformation of Fluroxene in Two Volunteers

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Our interest in the biotransformation of volatile halogenated anesthetics is maintained by the assumption of a relationship between metabolism of these substances and their organ toxicity.

We investigated the biotransformation of ^{14}C-fluroxene in several animal species [1] and were able to demonstrate that this compound is converted to trifluoroacetic acid and trifluoroethanol glucuronide. Our search of the literature reveals no information about the biotransformation of fluroxene in man.

METHODS

Each of the authors received 10 μl, corresponding to one microcurie, of fluroxene ‡ labeled at the fluorine-carrying carbon (New England Nuclear Corporation) by injection into a rapidly-running intravenous infusion of saline solution. Total urine was collected from 0 to 3, 3 to 12 and 12 to 24 hours. Urine was radioassayed, before and after lyophilization, by liquid scintillation counting, employing an internal standard for the calculation of counting efficiency. The nonvolatile radioactivity represents fluroxene metabolites.[1]

RESULTS

As can be seen in table 1, the cumulative amounts of excretion of fluroxene metabolites were 12.1 and 15.4 per cent of the injected dose in 24 hours. The rate of excretion decreases from about 1 per cent per hour initially to 0.3 to 0.5 per cent during the last 12 hours.

DISCUSSION

The extents of conversion of fluroxene-^{14}C to urinary metabolites in the two subjects were similar, and were remarkably like that found in mice and dogs under comparable conditions. It is perhaps noteworthy that in a study of halothane-^{14}C, HFC consistently metabolized at least twice as much anesthetic as DAB. This seems to indicate that different mechanisms exist for the biotransformation of halothane and that of fluroxene in man. Halothane is dehalogenated in animals [2] and man,[3] whereas fluroxene undergoes ether cleavage in animals.[1] The chemical pathway of fluroxene metabolism in man is currently being investigated.

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‡ 2,2,2-Trifluoroethyl vinyl ether (Fluoromar).

TABLE 1. Excretion of Nonvolatile Radioactivity in Urine by Two Men after Intravenous Injection of 1 μC of Fluroxene-^{14}C

Hours after Injection	Percentage of Dose Excreted	
	Subject DAB	Subject HFC
0–3	3.8	3.6
3–12	4.3	5.1
12–24	4.0	6.7
Total in 24 hours	12.1	15.4

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