1969 #1

THE DISPOSITION OF ^{3}H-DDT BY Squalus acanthias

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The disposition of chlorophenothane, commonly known as dichlorodiphenyltrichloroethane or DDT, was studied in S. acanthias using ring labeled ^{3}H-DDT obtained from New England Nuclear. Preliminary analysis of some data based on the assumption that all radioactivity is DDT is presented in Tables 1 and 2. DDT was dissolved in DMSO and injected i.a. at doses of 0.5 mg/kg. The compound rapidly disappears from plasma, but little radioactivity is found in the cerebrospinal fluid at 4-1/2 or 24 hours. However, a significant amount of ^{3}H-DDT was found in the gall bladder bile at 4-1/2 and 24 hours, suggesting that one of the pathways of disposition of DDT or its metabolites in the dogfish is via biliary excretion. Other tissues from these fish are presently being analyzed for radioactivity and future studies will utilize the ^{14}C-labeled compound and gas chromatography to further elucidate the fate of DDT in marine species.

Table 1

PLASMA, CSF, AND BILE LEVELS OF DDT IN THE DOGFISH

Dogfish no., sex, wt		Time (hrs)	μg/ml
1, Male, 2.4 kg	Plasma	1/2	1.58
		1	0.70
		4-1/2	0.17
	CSF	4-1/2	0.014
	Bile	4-1/2	0.03
2, Female, 2.3 kg	Plasma	1/2	2.76
		1	1.10
		4-1/2	0.13
	CSF	4-1/2	0.0002
	Bile	4-1/2	0.014

Table 2

PLASMA, CSF, AND BILE LEVELS OF DDT IN THE DOGFISH

Dogfish no., sex, wt		Time (hrs)	μg/ml
3, Female, 3.0 kg	Plasma	1/2	2.68
		1	1.61
		4	0.21
		6	0.13
		9	0.088
		18	0.049
		24	0.043
	CSF	24	0.006
	Bile	24	0.79
4, Female, 2.3 kg	Plasma	1/2	1.60
		1	0.59
		4	0.12
		6	0.09
		9	0.058
		18	0.03
		24	0.022
	CSF	24	0.003
	Bile	24	0.3

1969 #2

DETERMINATION OF DDT ISOMERS AND METABOLITES IN SOME MARINE ORGANISMS

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Chlorinated hydrocarbon pesticide residues have been found in fish from remote streams and from the oceans and even in penguins and seals from the Ross Sea area of Antartica (Nature, 210:670, 1966).

The results to be presented in this report were obtained from specimens collected from Leland Cove, near Laboratory Point, a few from laboratory tanks, and the dogfish from Frenchman Bay. Specimens were frozen in individual plastic bags, transported frozen to Bethesda, and analyzed for DDT isomers and metabolites by the procedures given in the sections, indicated below, contained in the Pesticide Analytical Manual, Volume I, Second Edition, 1968, published by the Food and Drug Administration, U. S. Department of Health, Education, and Welfare.

Each sample was first separated from any hard shell-like material, as in the case of shellfish, and ground in a blender or food chopper when necessary to obtain a homogeneous sample. A representative 20-gram portion was taken for analysis. If the total weight of sample was less than 20 grams, the entire sample was analyzed.