

Table 2

## COMPARTMENTAL ANALYSIS OF PHENOL RED AND ITS GLUCURONIDE IN THE DOGFISH\*

	10 min	1 hr	2 hr	4 hr	24 hr	48 hr
Plasma, Free	25.4 ± 3.0	15.4 ± 8.1	7.8 ± 4.6	6.1 ± 1.7	<2	<2
Kidney, Free	4.0 ± 1.5	----	1.7 ± 0.8	0.2 ± 0.1	0.1 ± 0.1	<.01
Urine, Free	<1	<1	9.4 ± 4.1	13.3 ± 7.6	23.8 ± 11.8	----
Urine, Total	<1	<1	12.2 ± 4.6	14.7 ± 8.3	30.6 ± 12.8	----
Liver, Free	17.8 ± 4.7	----	53.3 ± 9.5	41.5 ± 2.1	<5	<5
Bile, Free	<1	<1	2.4 ± 1.5	2.6 ± 1.6	28.0 ± 13.7	35.7 ± 16.0
Bile, Total	<1	<1	3.2 ± 2.0	3.7 ± 2.1	38.1 ± 19.2	49.5 ± 11.5

\* % Dose in indicated compartment

intact animal, organ perfusion, and tissue slice in attempts to support his hypothesis. As far as phenol red is concerned the dogfish appears to be an excellent model because by the use of an intact animal, we have been able to show that this drug is handled about equally by renal and hepatic mechanisms.

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## THE FATE OF RADIOCARBON METHYL MERCURY IN THE LOBSTER

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Because of the reported persistence of  $^{14}\text{C}$ -DDT in the hepatopancreas of the lobster, it was of interest to investigate whether another important environmental pollutant, methyl mercury, behaved similarly after intravascular injection. Other studies were conducted to measure  $^{14}\text{C}$ -methyl mercury tissue levels in lobsters after feeding DDT-contaminated food or after exposure to DDT-containing water. Lobsters weighing about 400-500 g were procured locally (Lunts and Small Lobster Bar, Trenton, Maine). One group of animals received 1.0 mg/kg of  $^{14}\text{C}$ -methyl mercury chloride (Amersham/Searle) (Me-Hg) in 50% ethanol by injection into the pericardial sinus. After administration of this material, animals were placed in a standard lobster crate, were submerged in Laboratory Cove at about 30 feet of water and were fed pieces of mackerel two times a week. After the time intervals indicated in Table 1, the animals were dissected, and further handling was as described elsewhere in this Bulletin (Janicki, Guarino, and Kinter, 1972). The distribution at 24 hrs is some-

TABLE 1  
DISTRIBUTION OF <sup>14</sup>C-METHYL MERCURY IN THE LOBSTER \*

Organ	24 hr	6 Day	13 Day	33 Day
Plasma	1.3	0.4**	0.5**	0.2**
Hepatopancreas	10.5	6.8**	6.1**	1.6**
Green Gland	1.4	1.2	3.0**	2.2**
Stomach	7.7	3.8**	3.5**	1.8**
Intestine	25.2	6.9**	4.4**	3.2**
Male Gonad	18.2	13.3	11.2	4.0**
Egg mass	4.1	4.4	2.2	---
Brain	14.0	6.6**	6.5**	3.0**
Gills	9.4	3.0**	2.0**	1.3**
Claw Muscle	4.6	5.5	6.0	0.9**
Tail Muscle	4.7	4.5	5.9	7.6**
Heart	23.2	7.8**	8.8**	5.9**

\* mean d/ml or g x 10<sup>3</sup> for 2-6 animals for each time period

\*\* significantly different (P < 0.05) from 24 hr values

what similar to that which was observed for DDT (Bull MDIBL 10, 23, 1970) since <sup>14</sup>C-Me-Hg occurred in high concentrations in heart, hepatopancreas, and gonads. On the other hand, this early distribution of Me-Hg differed from that of DDT since large amounts of the material occurred in intestine, brain, and gills.

By the sixth day all organ concentrations tended to decrease significantly from the levels at 24 hrs and this general trend continued for the duration of the experiment. A notable exception to this trend was in the tail muscle where the actual levels significantly increased by the 33rd day. In terms of the administered dose, the average tail muscle contained about 19% at 24 hrs and about 34% at day 33, whereas the liver contained 11 % and 3% at these respective times. The gonadal levels did not significantly decrease over 13 days and this long duration of exposure of reproductive organs to a known mutagenic, embryotoxic, and teratogenic agent may be of considerable importance.

To demonstrate the possible relevance of results obtained by injection into the pericardial sinus to other more realistic sites of entry, uptake of Me-Hg from water and food was measured as described elsewhere in this Bulletin (Guarino, Pritchard, Call, Bering, and Rall), except that animals were sacrificed 6 days after exposure. It is seen in Table 2 that absorption from both water and

TABLE 2  
DISTRIBUTION OF  $^{14}\text{C}$ -METHYL MERCURY IN THE LOBSTER  
AFTER EXPOSURE EITHER FROM WATER OR FROM FOOD\*

	Water	Food
Hepatopancreas	22.7 $\pm$ 2.9	68.0 $\pm$ 13.2
Tail Muscle	60.2 $\pm$ 3.7	5.1 $\pm$ 3.1
Egg mass	1.2 $\pm$ 0.2	1.4 $\pm$ 0.2
Male Gonad	0.6 $\pm$ 0.8	1.1 $\pm$ 0.4
Gill	9.1 $\pm$ 1.9	6.0 $\pm$ 1.0
Intestine	1.0 $\pm$ 0.4	1.2 $\pm$ 0.1
Stomach	2.2 $\pm$ 2.9	10.2 $\pm$ 9.6
Heart	2.7 $\pm$ 0.7	2.0 $\pm$ 0.6
Green Gland	0.5 $\pm$ 0.3	0.3 $\pm$ 0.2
Brain	<.1	<0.1
Plasma	2.1 $\pm$ 1.6	1.5 $\pm$ 0.7

\* mean  $\pm$  SD percentage of absorbed dose residing  
in indicated tissue

food did occur, but the tissue distribution is somewhat different than after injection into the pericardial sinus. The results after absorption from water were most like those after injection, where the hepatopancreas (23%), tail muscle (60%), and gill (9%) contained most of the absorbed dose. On the other hand, the hepatopancreas (68%) retained most of the radioactivity 6 days after feeding, while stomach (10%) and tail muscle (5%) contained most of the rest of the absorbed dose. The rest of the organ distribution was essentially the same by either of the three routes of administration.