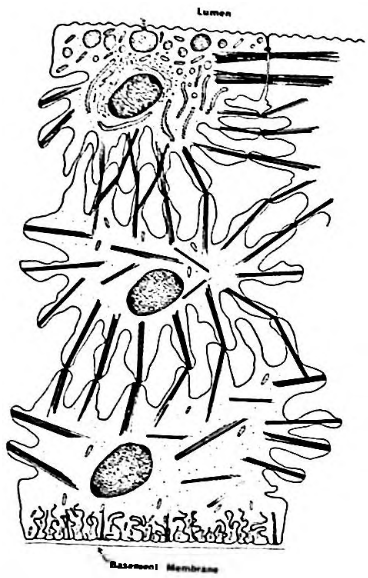

Figure 4

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DDT Inhibits Nutrient Absorption and Osmoregulatory Function in *Fundulus heteroclitus* Intestine

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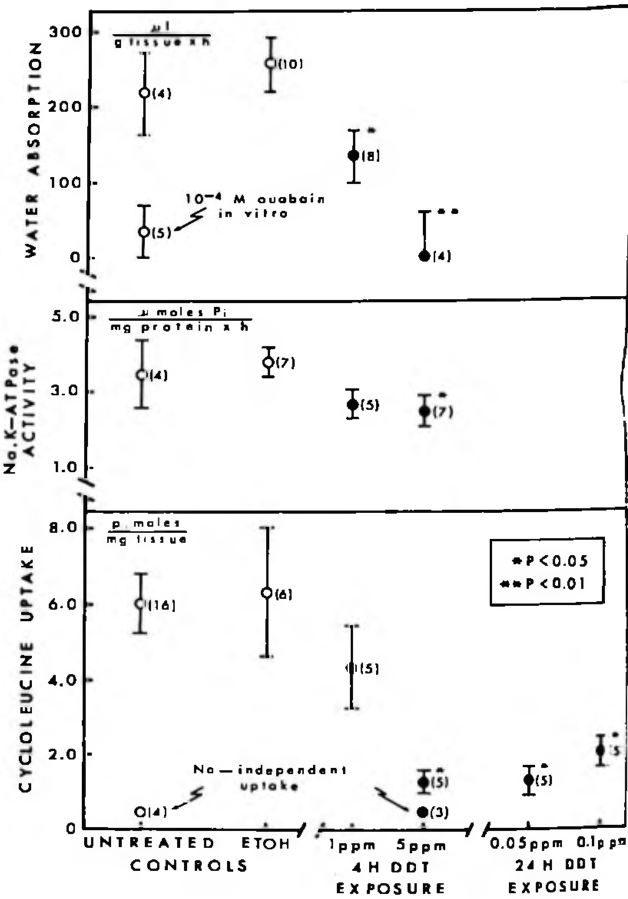
Previous studies have suggested that DDT-induced osmoregulatory failure in marine teleosts is accompanied by inhibition of intestinal Na,K-ATPase, an enzyme associated with the Na pump of the epithelial cell (*Science, 173:*1146-1148, 1971; *Environ. Health Perspectives,* 1:169-173, 1972). Since intestinal osmoregulatory (salt and water) nutrient (sugar and amino acid) transport is Na-dependent, (*Physiol. Rev.,* 50:637-718, 1970), pump inhibition by DDT could affect a wide range of essential intestinal functions. To determine if Na-coupled processes were affected by DDT *in vivo*, sea water (SW)-adapted Killifish (*Fundulus heteroclitus*) were exposed to o.o5-ppm DDT in SW as previously described (*Environ. Health Perspectives,* 1:169-173, 1972). After 4 h of exposure to 1 or 5 ppm, fish exhibited elevated plasma Na levels as reduced (30-35%) intestinal Na, K-ATPase activities; intestinal absorption of water and cycloleucine (a non-metabolized leucine analog) was substantially inhibited (Fig. 1). Significantly, only the Na-dependent component of cycloleucine transport was affected by DDT. Comparable inhibition of cycloleucine transport was also observed in fish exposed to 0.05 or 0.1 ppm for 24 h (Fig. 1). DDT levels in the intestinal mucosae of fish exposed to 5 ppm for 4 h and 0.05 oom for 24 h averaged 5 and 1 ppm, respectively.

The data reported here suggest a cause and effect relationship with regard to impaired fluid transport and osmoregulatory disruption. Since there are no definitive data available which indicate whether DDT retrads growth or protein synthesis in fish, the environmental significance of the observed impairment of amino acid transport has yet to be determined.

This study was supported by United States Pub Health Service Grant ES 00920.



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Regeneration in Spinal Cord of Hagfish, *Myxine glutinos*

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Lower vertebrates retain a remarkable capacity fc functional regeneration of their central nervous systems This phenomenon has been most thoroughly charac terized in the goldfish visual system. When the retin axon is cut, the goldfish retinal ganglion cell makes vigorous regenerative response which includes cellul hypertrophy, increased synthesis of RNA and protei formation of a large number of sprouts at the cut end an guidance of these sprouts into the optic tectum throug glial channels. The most significant points of departu from the response of mammalian central neurons t axotomy which does not lead to regeneration, seem to b in (a) the quanitatively greater synthetic response by th cell body and (b) the apparently active participation b the glial cells in the guidance of the regenerating neurit The hagfish spinal cord was examined n order t