OCCURRENCE OF DDT IN HUMAN FAT AND MILK

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BEFORE it is possible to evaluate any chronic occupational DDT exposure it is necessary to determine a base line, i. e., what exposure, if any, is suffered by the general population. DDT has had widespread use. Investigations conducted by the Food and Drug Administration indicate that this has resulted in traces of DDT appearing in some truck crops, dairy and meat products, and more recently, even in flour. To evaluate DDT exposure by repeated analyses of individual dietaries of a large number of persons would be technically very difficult. However, experiments conducted in our laboratories [1] have shown that the storage of DDT in adipose tissue is an extremely sensitive "biological magnifier" of trace amounts of ingested DDT. For example, we have shown that 0.1 p.p.m. DDT in the diet of the rat leads to the storage of about 10 to 15 p.p.m. DDT in the fat. On the assumption that human fat would respond by storage of DDT consumed in traces, an attempt has been made to use this sensitive indicator as a gage of DDT exposure in the general population.

Seventy-five samples of human fat were analyzed for DDT. The specimens were furnished through the cooperation of Dr. Francis Pottenger of Monrovia, Calif. The samples were all abdominal fat obtained at autopsy, biopsy or abdominal surgery. Since it appeared likely that traces of ingested DDT might be excreted in human milk, 32 samples from 32 different Negro women outpatients of a District of Columbia Hospital were analyzed for DDT. The specimens were furnished through the cooperation of Dr. E. A. Clark.

It must be emphasized that none of the subjects were occupationally employed as pesticide operators. Protocols of all cases examined were kept. These indicated that the greatest possible amount of DDT to which they were exposed must have come from the diet, although in a few instances the inhalation of DDT.-containing sprays and dusts incidental to their use in and about the home could not be excluded.

DDT analyses were made by a modified Schechter procedure,[2] sufficiently sensitive to detect and quantitate 5 μg. of DDT in 100 ml. milk or 1 μg. DDT in 1 Gm. of fat. The modified Schechter procedure was found to give the same results as the standard Schechter procedure, using the method of Clifford,[3] in which the isolation of the ortho and para isomers of DDT is used to establish the identity of DDT. For additional discussion of this method, reference should be made to the paper by Laug and associates.[1] Special care was taken to separate the DDT from the fat before attempting its colorimetric determination.

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