A CASE OF DDT STORAGE IN HUMAN FAT

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DDT has been very widely used during recent years and some individuals have been exposed to it for extended periods of time. The demonstrations that this insecticide appeared in the tissues of cattle following spraying led to speculation concerning the possibility of appreciable quantities appearing in the tissues of humans and of possible deleterious effects resulting from such storage. At the present time no case of death definitely attributable to DDT alone has been recorded in the United States, nor is the effect of small quantities absorbed over a long period of time known. Therefore, it was interesting to obtain, by biopsy, fat from an individual who has been working with DDT since 1943.

During the recent war, the subject (male—age 37) worked with DDT experimentally during 1943 and 1944 and by the summer of 1945 was using large quantities. At first rigid precautions were observed and any DDT spilled on the skin was quickly removed with soap and water. Gradually, familiarity led to carelessness and only the usual precautions of washing before meals and when the work was done in the evening were followed. During the summers of 1946, 1947 and 1948, the subject was frequently soaked with sprays containing up to 5.0 per cent DDT. During the winter months, exposures were less frequent. In addition, the subject consumed foods contaminated with DDT. Approximately a quart of milk containing one-half to one and one-half ppm was used daily. The meat contained 1-10 ppm and many of the fruits and vegetables used were also contaminated with DDT.

During July of 1948, a lipoma was removed with sterile technique from the neck of the patient. The fatty tissue was wrapped in sterile gauze and stored in a freezing unit until it could be analyzed by the Agricultural Chemistry Research Department of the Oklahoma Experiment Station, according to the total organic chloride method of Carter (1947). This analysis was run in duplicate in connection with a long series of tissues from animals sprayed with DDT. The Agricultural Chemistry Research Department has been running large numbers of DDT analyses for the past three years and there is little reason to question the accuracy of their determinations.

The duplicate samples indicated 8.9 and 8.3 ppm respectively of organic chloride which when converted to DDT represents approximately 17 ppm of DDT in the fat. Since the analysis was for total organic chlorine, rather than DDT, it is impossible to say that all of the organic chlorine represented DDT alone and not some of the other chlorinated hydrocarbon insecticides with which the subject has worked. However, exposures to DDT were many times greater than to the other insecticides, and it is probable that a large per cent of the organic chlorine represents DDT.

The presence of DDT in the tissues of animals consuming small amounts of this toxicant with their food or sprayed with DDT for external parasite control has been demonstrated by several workers. Therefore, it is not surprising that an individual frequently wet with DDT and regularly consuming foods containing small amounts of this insecticide should have stored appreciable quantities in the fat tissue.

Experimental animals exposed to far larger amounts of DDT than the subject showed no symptoms of DDT poisoning. Similarly, two physicians were unable to find any toxic manifestations in the human subject attributable to DDT. A possible health hazard might exist if he were forced to utilize body fat as a result of illness or starvation. Withholding food from laboratory animals that have stored DDT in the tissues has caused death with typical DDT symptoms.

SUMMARY

The storage of approximately 17 ppm DDT in the fat of a human is reported. The subject had been exposed to DDT sprays for over 4 years and had consumed foods containing appreciable quantities of DDT.

LITERATURE CITED

CARTER, R. H. 1947. Estimation of DDT in milk by determination of organic chlorine. Ind. Eng. Chem. Anal. Ed. *19*:54.