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Experiments on Lindane Metabolism In Plants III. Formation of β-HCH

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It has been reported in earlier works (STEINWANDTER 1976 a, 1976 b, 1976 c), that HCB as well as α-HCH may be formed by lindane. In this context there is no answer to the question whether HCB and α-HCH represent the final products of lindane metabolism under the given conditions or whether both insecticides can be transformed into secondary products or turned into HCH-isomers.

In order to solve this problem four grass samples were contaminated with α-HCH; they were stored together with the appropriate blank samples in a closed room. The contaminated samples, which had a concentration of about 2 ppm of α-HCH, were analyzed periodically.

In this paper the description of experimental details and cleanup procedures will not be discussed, since those are described explicitly in the above cited publications (STEINWANDTER 1976 a-c). The α-HCH was identified gas chromatographically by ECD with several GC-columns (STEINWANDTER 1976 d) as well as by mass-spectroscopy.

RESULTS AND DISCUSSION

The results of the change from α-HCH to β-HCH are presented in Table I. Column 1 shows the number of the various grass samples, column 2 the appropriate amount of β-HCH on the hay samples without α-HCH addition, and column 3 the amount of β-HCH on the hay samples with α-HCH addition. The data listed in Table I were taken after a storage time of 6 months.

According to Table I the mean value of β-HCH on the blank samples was o.o19 ppm. By contrast the amount of β-HCH was increased to o.o73 ppm in the

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TABLE I

Formation of β-HCH on plant material

Number of the sample	Amount of β-HCH (ppm)	
	on the hay sample without addition of α-HCH	on the hay sample with addition of α-HCH
hay 1	o.o22	o.o83
hay 2	o.o2o	o.o71
hay 3	o.o15	o.o65
hay 4	o,o21	o.o73
Mean value	o.o19	o.o73

hay samples with added α-HCH (Table I, column 3). Therefore, the difference of o.o54 ppm represents the amount of β-HCH formed from α-HCH.

These results indicate that lindane may act as an additional source of contamination for the insecticide β-HCH, also shown in previous investigations with HCB and α-HCH (STEINWANDTER 1976 a, 1976 b). However, the experiments and the results have to be carefully interpreted for the ecological situation, since it is difficult to consider all the parameters in the laboratory which determine the ecosphere. These problems will be discussed in a succeeding paper.

REFERENCES

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