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ISOLATION AND IDENTIFICATION OF DIELDRIN METABOLITES FROM URINE OF RABBITS AFTER ORAL ADMINISTRATION OF DIELDRIN-^{14}C

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During the last years, various papers (2-6) have been published on the detection of hydrophilic metabolites in the excreta of mammals after aldrin or dieldrin exposure, but so far nothing seems to be known on the chemical structures of such metabolites. The following experiments were made in order to isolate and identify the metabolites found in the excreta of rabbits after oral administration of dieldrin-^{14}C.

Method

For isolation of metabolites of dieldrin, each of eight rabbits received 206.6 mg of dieldrin-^{14}C (spec. activity 30.5 μC/mMol) over a period of 21 weeks by means of a stomach tube, corresponding to a total of about 56-58 mg/kg. The doses were administered twice per week. Single doses were increased from 2.5 mg to 7.5 mg during the experiment.

The animals were kept in individual metabolism cages which enabled us to collect the urine and faeces separately. During the experiment the ani-

mals were allowed free access to food.

The urine collected was extracted with diethylether for 48 hours. The urine was not acidified in order to avoid hydrolysis of the metabolites. The faeces were dried in a stream of hot air, pulverised and extracted with diethylether.

The amount of radioactivity found in each extract was determined in a lead chamber, by counting the impulses emitted from an aliquote of the extract. For qualitative analysis of the radioactive compounds, thin-layer chromatography was resorted to.

For isolation of the radioactive compounds the extract of urine was concentrated and prepurified by column chromatography on silica gel. Thin-layer chromatography was employed for further purification of the metabolites obtained.

Results

During the whole experiment the animals showed normal growth and no signs of sickness or disability could be observed.

Excretion

At the end of the feeding period (22nd week) the animals had excreted in total 42.2 % of the radioactivity administered (in urine 29.7 %, in faeces 12.5 %). After 52 weeks the excretion in urine had increased to 43.1 %, while the content of radioactivity in the faeces had decreased rapidly after termination of dieldrin administration and was negligibly small from the end of the 24th week onwards.

Table 1 gives a detailed survey of the amounts of dieldrin-^{14}C administered and the average of total excretion during the feeding period.