

Residues of Hexachlorobenzene in Wild Mammals of Germany

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In Germany as well as in other countries the widespread occurrence of hexachlorobenzene (HCB) in the environment has received considerable attention during the recent past. However, only a few studies report the contamination by HCB of game animals - mostly of birds - in middle European countries (ACKER and SCHULTE, 1971; KOEMAN, 1972). The purpose of the present study, therefore, was to examine adipose tissue of some mammals of Germany for its content of HCB. The species investigated were fox (*Vulpes vulpes*), wild boar (*Sus scrofa*) and doe (*Capreolus capreolus*).

EXPERIMENTAL

Adult foxes and wild boars of both sexes and does were shot in their natural habitat, except four foxes (see footnote 2 in Table 1), which were kept in captivity over 2 months prior to killing. At that time they were fed on meat of the slaughterhouse. Immediately after the animals were shot or killed samples of subcutaneous adipose tissue were dissected out. They were stored at -18°C until being processed. The identification and quantification of HCB were performed by means of gas-liquid chromatography. The lower limit of detection was 0,01 ppm of HCB in the wet tissue. A detailed description of the analytical procedure is given by KOSS and KORANSKY (1975).

RESULTS AND DISCUSSION

The residues of HCB were detected in all foxes and wild boars, but only in 4 of the 6 does (Table 1). The mean levels of HCB residues were found higher in fox and wild boar than in doe. The differences seem to result from the specific food habit of the three species.

Table 1: HCB residues in the subcutaneous adipose tissue of game animals of Germany

Species	Collection sites	Time of collection	HCB residues ($\mu\text{g/g}$ wet tissue)
Fox	South - Hessen	Autumn 1973	0,24 0,22 0,18 0,52 0,62 0,22 (mean = 0,33)
	Oldenburg*	Autumn 1973	0,42 0,42 0,34 0,38 (mean = 0,39)
	South - Hessen	Summer 1974	0,56 0,09 0,09 0,03 0,07 0,10 0,02 0,04 0,10 0,77 0,06 (mean = 0,18)
Wild boar	South - Hessen	Winter 1973/74	0,05 0,44 3,11 0,29 0,17 0,38 0,51 (mean = 0,71)
	South - Hessen	Winter 1973/74	n.d.** n.d.** 0,05 0,05 0,03 0,03 (mean = 0,03)

The animals from the Oldenburg area were kept in captivity 2 months before killing.

No HCB was detected (the lower limit of detection was 0,01 ppm).

Since fox and wild boar are known to feed on small animals like mice and invertebrates, an accumulation of HCB via the food chain presumably takes place. Therefore, it is obvious that the doe feeding exclusively on plant materials shows the lowest residue levels. This finding agrees well with the studies carried out in Australia (BEST, 1973). There, it was observed that the residue levels of several pesticides including HCB were higher in predators or scavengers than in herbivores.

In one of the wild boars examined in our laboratory, HCB residues as high as 3,11 ppm were detected (Table 1). This relatively high residue level necessitates to emphasize that, in conformity with the German regulations on pesticide residues in human food (DDT-Verordnung, 1973), special care must be exercised in utilization of game animals as human food when the tolerance limits of residues including HCB are exceeded. Therefore the most important task is a continuous testing of the environmental impact of HCB and of other chlorinated hydrocarbons.

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