

Rodenticide residues in non-target small mammal species and their occurrence in owl pellets

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Worldwide, the biocidal use of anticoagulant rodenticides (AR) is common, caused by hygienic as well as stored product protection aspects. Beside target rodents like Norway rats and house mice, non-target rodents and other small mammals are able to consume bait (primary poisoning). Secondary poisoning happens when raptors or scavengers consume small mammals containing AR residues. Data on AR residues in non-target species are missing in Germany. The aim of our study is to screen for residues in non-target small mammal species.

Because of higher abundance of rats and house mice on farms in cold months, we designed field experiments in autumn and late winter. Before, three days after start and after a systematic rodent control campaign we trapped rodents on transects beginning at bait boxes and ending about 100 meter away from the farm. Brodifacoum rolled oats bait was used. To detect the distribution of poison liver samples of caught mammals were analyzed for all eight registered anticoagulant rodenticides using a high performance liquid chromatography (HPLC) method.

Pellets from barn owls (*Tyto alba*) were collected from nest and resting sites on the same farms to investigate

owl food composition, which enables calculating the potential risk of secondary poisoning in combination with known residues in prey species. Pellet samples were taken monthly throughout the year.

First results show that brodifacoum residues mainly occurred in the direct surrounding of a farm. In this area *Apodemus*-species more frequently contained residues than *Microtus* species. The pattern of residues in bank voles varied between autumn and winter session. Unexpectedly we found, that even shrews showed partly high concentrations of brodifacoum, documenting them to consume quite significant amounts of bait. Voles were always preyed upon most frequently by barn owls. *Apodemus*-species were found in pellets from all investigated farms as well, and in every season. More results of further experiments on these farms are needed to calculate the risk of owls through secondary poisoning.

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