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Safety of pesticides and biocides for pets and farm animals from a toxicological point of view

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Objectives

The manufacturing and making available on the market of biocides should not result in harmful effects on human and animal health ((EU) No 528/2012). The same holds true for plant protection products ((EC) No 1107/2009). Whereas the risk assessment of pesticides for human health is well regulated through clear guidelines, no official evaluation concept for the risk assessment for farm animal and pets is currently available. In the recent study a systematic literature search on toxicological data for selected pesticides in various groups of animals was performed, which could serve as a starting point to establish an approach for the risk assessment for pets and farm animals. The aim was to answer the following questions:

1. Are the reference values derived for humans (ADI, ARfD) also applicable for animals?
2. If not, how should a separate risk assessment be performed for certain animal species?

Material and methods

A literature search was performed for a total of seven substances. Toxicological data for herbivores, carnivores, omnivores, poultry/birds, reptiles and fish were considered. The retrieved publications were assessed with regard to their reliability and relevance.

Results

The literature search revealed significant differences in the quality of the database for the specific substance groups. For the acaricides acequinocyl and fenpyroximate, only few published data are available. More is known about insecticides (carbofuran, fluralaner, fipronil) as some of them are used as veterinary drugs, resulting in a more comprehensive database. For substances with long-lasting use such as the molluscicide metaldehyde the toxicological database is extensive. In view of the rodenticide flocoumafene data are available for selected species, including many pets, but missing for ruminants, horses and reptiles. A detailed analysis will be provided.

Conclusion

The limited toxicity database available indicates that the human toxicological reference values may not always be protective for the various animal species. Toxicokinetic species differences may play a role. Further research is needed to collect more information in order to develop an approach for the risk assessment for pets and farm animals.