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Towards
the veterinary
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of the
future

Main topic : Toxicology in animal health and environment

Prevalence of anticoagulant rodenticides in birds of prey in Ontario, Canada

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Introduction: Anticoagulant rodenticides (AR) are widely used in residential and agricultural areas to reduce rodent populations that could potentially impact human health and the environment. Unfortunately, exposure of non-target species to rodenticides has been extensively documented. In 2010, the Health Canada's Pest Management Regulatory Agency (PMRA) re-evaluated protective measures for the use of several substances, as part of a risk-reduction strategy for rodenticides in Canada, specifically to prevent exposure of children, pets and non-target wildlife. Manufacturers had to provide updated labelling by December 2012. The present study describes the prevalence of AR in raptor populations in Ontario, Canada, 5-7 years after the publication of the updated regulatory guidelines for the use of domestic and commercial rodenticide products.

Methods: liver samples from 133 raptors were submitted to the toxicology section of the Animal Health Laboratory, University of Guelph for quantitative analysis of anticoagulant rodenticides. The samples were collected by the Canadian Wildlife Health Cooperative (CWHC), University of Guelph, between 2017 - 2019, and kept frozen until analysis. The livers were analyzed by a targeted LC-MS/MS method to detect 14 first and second generation anticoagulants with a sensitivity of a few parts per billion. Most animals were found dead due to multiple causes and submitted to the CWHC for surveillance studies.

Results: a total of 82 out of the 133 (62%) analyzed samples contained from 1 to 4 different AR residues. The second generation AR (SGAR) bromadiolone (41%), difethialone (30%), and brodifacoum (25%) were the most commonly identified.

Conclusions: secondary exposure of non-target wildlife species to AR is still very common, despite recent implementation of mitigation measures for the use of AR in Canada. These results also indicate that raptors may encounter poisoned preys multiple times. The significance of repeated exposure to sub-lethal doses needs further investigation. The information provided by this study should be helpful for future re-evaluations of the use of AR in Canada.