

Anticoagulant rodenticide poisoning in lactating ewes: exploration of intoxication markers and human health dietary implications

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Intense use of anticoagulant rodenticides in pest management can sometimes result in accidental exposure of domestic animals and wildlife, but relevant markers are scarce to differentiate life-threatening poisoning from insignificant exposure. When it comes to production animals, another issue is the level of residues in milk, eggs or meat from those exposed animals. Data from a flock of Lacaune ewes (n=23) accidentally exposed to a first-generation rodenticide, chlorophacinone, were used to explore the relevance of clinical and biological markers (prothrombin time, PT) in the assessment of the severity of exposure, as well as to determine pharmacokinetics of chlorophacinone in milk of those ewes in order to estimate the risk associated with its consumption. Three days after accidental ingestion, chlorophacinone was detected in plasma of 18 ewes, with concentrations exceeding 100 ng/mL in 11 animals, but none of them displayed clinical signs. Chlorophacinone was detected in milk on day 2 post-exposure and remained quantifiable for at least 7 days in milk of these 11 ewes. Concentrations in milk were much lower than in plasma and decreased quickly (mean half-life of 2 days). Variation in prothrombin time (PT) on Day 3 suggested that some of the ewes that ingested chlorophacinone may have been adversely affected, but PT did not facilitate estimation of the quantity of chlorophacinone consumed. This study showed that clinical signs or hematological markers may not be relevant to assess the severity of exposure in this ruminant species. It also demonstrated a dose-dependent mammary transfer of ingested chlorophacinone. Using safety factors described in the literature, human health concern related to the consumption of the milk from these dairy ewes seemed low.