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Does the lower concentration of anticoagulants affect the efficacy of rodenticide baits?

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Extended abstract

Rodents belong to dominant synanthropic pests in agriculture environment, where cause wide range of damages by feeding on crops, gnawing of materials and faecal/urine contamination (Frankova et al. 2016, Stejskal et al. 2016). Rodents are predominately controlled by anticoagulant-based rodenticides (AR) with the chronic mode of action (e.g. Frankova et al. 2017). Their delayed efficacy prevents rodents to connect the consumption of the bait with subsequent toxic effects and thus, favours them over other chemical rodenticides. On the other hand, application of ARs is permitted under strict regulation (Regulation (EU) No 528/2012) as ARs are considered as PBT (i.e. persistency, bioaccumulativity and toxicity) substances which pose environmental risks.

In addition, EU Commission recently adopted reclassification of ARs products (Commission Regulation (EU) 2016/1179; shall apply from 1 March 2018) - rodenticides with anticoagulant of 30 ppm or more must be labelled as “toxic to reproduction” and will be available to professional use only. Currently, it concerns seven of the eight approved anticoagulants, which contain 50 ppm of active substance. This Regulation leads manufacturer to produce rodenticide baits with a decreased concentration of anticoagulants to avoid a reclassification of products.

We focused on the testing efficacy of standard (50 ppm) and lower (25 ppm) concentration of anticoagulant in two brodifacoum-based baits in wild house mouse (*Mus musculus*). The laboratory no-choice feeding tests showed 100% mortality (mean survival time was 5.3 ± 2.1 days) for both concentrations. The consequent field experiments confirmed the previous laboratory results for the new baits with the lowered concentration (i.e. 25 ppm): during the three-week application period we found a significant decrease of both the tested bait and monitoring non-toxic bait consumption. Our study shows promising efficacy of products with the lowered concentration of brodifacoum. Nevertheless, there is a work ahead rodent scientists to illuminate the new baits efficacy in rodent populations with the decreased physiological sensitivity or increased resistance to anticoagulants.

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