Effects of Environmentally Realistic Brodifacoum Exposure on Feline Immune Response

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ABSTRACT: Recent studies have correlated anticoagulant rodenticide exposure to the development of mange in wild felids. However, a causative association between anticoagulant exposure and the onset of mange or immune dysfunction that may increase susceptibility of wild felids to manage has not been established. To investigate the potential connection between anticoagulant rodenticide exposure and immune dysfunction, specific-pathogen-free domestic cats were exposed to brodifacoum over a six-week period and vaccinated with irrelevant antigens at different points during the course of the experiment to assess recall and direct immune responses. Measures of immune response included delayed-type hypersensitivity tests and cell proliferation assays. IgE and antigen-specific antibodies were quantified via ELISA assays. No cats developed coagulopathies despite having detectable levels of brodifacoum in the blood. Brodifacoum cats had significant decreases in the production of certain cytokines including IL-6 and IL-4. The results of this study suggest that cats may be less susceptible to anticoagulant rodenticide induced coagulopathy and that the effects of environmentally realistic brodifacoum exposure on humoral and cell-mediated immunity against foreign antigen exposures in domestic cats are minimal.

KEY WORDS: anticoagulant rodenticides, brodifacoum, cats, cytokines, felids, immune response, notoedric mange

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