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Preface

Metaflumizone—A new ectoparasiticide for dogs and cats

This special issue of *Veterinary Parasitology* includes the first publications that discuss the discovery, mode of action, toxicology, and insecticidal activity of a novel semicarbazone, metaflumizone. The 16 papers in this issue present the details of information discussed at the Fort Dodge Animal Health Global Roundtable event at Coral Gables, Florida, in October 2006, and the recent symposium at the World Association for the Advancement of Veterinary Parasitology in Ghent, Belgium in August 2007. Papers from proceedings and workshops are often difficult to obtain and the authors and reviewers of these papers deserve a special thanks for making them available in this special issue.

Metaflumizone is derived from the pyrazoline chemistry and acts by binding the voltage-dependent sodium channels in insects similar to another oxadiazine insecticide—indoxacarb. Metaflumizone produces a relaxed paralysis in a broad range of important pest insects including lepidopterans, beetles, ants, and termites. Against common ectoparasites of companion animals it has potent activity against fleas and metaflumizone has been formulated with amitraz to provide control of fleas, ticks and mites on dogs. It is marketed for ectoparasiticide use as ProMeris[®] for cats or ProMeris/ProMeris Duo[®] for dogs. These products introduce metaflumizone to veterinary medicine as a novel mode of action for flea control and the combination represents the first spot-on formulation of amitraz for use on dogs. Applications of metaflumizone provided at least 6–8 weeks control of fleas and metaflumizone plus amitraz combination provided at least 3–6 weeks of ticks and preliminary studies indicated a high level of control of mange mites. In addition to excellent flea and tick control, topical applications of both products reduced the pruritic behavior and clinical signs associated with Flea Allergic Dermatitis (FAD) in cats and dogs.

With the development of topically applied ectoparasiticides in the past 10 years, a revolutionary change occurred in the pest management of fleas. Their effectiveness and rapid adoption eliminated the widespread application of insecticides to the indoor and outdoor environments and the bathing and dipping of animals. They provided the veterinarian and pet owner with a safe and extremely effective means of controlling flea infestations and truly implementing an Integrated Pest Management program. In recent years, there has been an increasing emphasis on so-called ‘green chemistry’ or insecticides that are extremely safe and environmentally friendly in urban situations. Metaflumizone has a very low acute oral and dermal toxicity, LD₅₀ > 5000 mg/kg for rats, and is extremely safe for use on pets as reported herein. These topical applications, especially metaflumizone, fit nicely into the public’s expectations and impressions of ‘green chemistry’.

Even though the current ectoparasiticides remain effective, there has been a concern that physiological insecticide resistance may develop with their widespread adoption. There is no known resistance or cross-resistance to this novel mode and site of action—the blockage of sodium channels of the nervous system. Thus, the introduction of metaflumizone is an important addition to the current arsenal of insecticides used to control fleas. The addition of amitraz in a convenient, topical formulation similarly provides an alternative class of acaricidal chemistry to the current products available for tick and mite control in dogs. These new products will provide alternative modes of action for effective flea and tick control and thus could be important tools for the control of these pests and the prevention and management of insecticide or acaricide resistance ensuring that these important ectoparasiticides will continue to be available long in to the future.

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