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## Safety evaluation of ectoparasiticides in dogs using GC/MS

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Currently, the global dog population is estimated at 900 million (>80 million in the US, 15.9 million in Russia, 8.5 million in the UK, 7.3 million in France, 7 million in Italy and 6.9 million in Germany). Dogs are commonly infested with blood sucking ticks, fleas, mosquitoes and other ectoparasites which pose a serious global health concern as they transmit infectious diseases between humans and animals. Therefore, the use of ectoparasiticides on dogs is crucial and inevitable. Presently, a large number of ectoparasiticides (having a combination of active ingredients) are used to provide broad spectrum effects against ectoparasites as larvicides and adulticides. Due to lack of safety data, concerns have been raised for their safe use in dogs and the risks posed to those that handle the dogs on a daily basis. Using GC/MS, residues of fipronil, s-methoprene, selamectin, etofenprox, amitraz, permethrin, cyphenothrin, pyriproxyfen, indoxacarb and piperonylbutoxide were determined in cotton glove extracts in variable concentrations after topical application of various ectoparasiticides (Frontline, Advantage, Revolution, Bio Spot Defense, Certifect, Activyl, Parastar Plus and Vet Guard Plus). GC/MS analysis offered identification, confirmation based on specific ions and quantitation of each pesticide in glove extract to assess the level of residue transfer and risk to humans. Dog blood analysis revealed no residue of any pesticides, suggesting poor dermal absorption. None of the products caused any adverse effects to the dogs. Owners and veterinary personnel can be exposed to significant levels of pesticides following daily exposure if proper precautions are not taken.

### Biography

Ramesh C Gupta has earned his DVM, MVSc and PhD from India and currently serves as Professor and Head of Toxicology Department. For decades, he has conducted experimental brain research in relation to pesticide toxicity. He has served the panels of NIH, CDC, NIOSH, and NAS and has published more than 350 publications, including 7 books: *Toxicology of Organophosphate & Carbamate Compounds*, *Veterinary Toxicology*, *Handbook of Toxicology of Chemical Warfare Agents*, *Anticholinesterase Pesticides*, *Reproductive & Developmental Toxicology*, *Biomarkers in Toxicology and Nutraceuticals*. In 2006, he has received the Murray State University's Distinguished Researcher Award. He is a Diplomate of American Board of Toxicology and Fellow of American College of Toxicology, American College of Nutrition and Academy of Toxicological Sciences.

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