ALLERGEN INTERVENTION PROGRAM[SM] TARGETING HOUSE DUST MITE (*DERMATOPHAGOIDES* SPP.) CONTROL

B. L. DODSON[1] & J. A. MOLLET[2]
[1]Allergen Rescue Inc., 4042 Championship Dr. Annandale, VA 22003 USA
[2]Entomology Department, Price Hall, Virginia Polytechnic & State University, Blacksburg, Va. 24061 USA

House dust mites or HDM (*Dermatophagoides* spp.) are domestic mites that generate aeroallergens, posing health risks to many individuals. Effective intervention programs are designed to decrease the occurrence of asthma, rhinitis, or atopic dermatitis resulting from the presence of aeroallergens at concentrations above sensitization threshold levels.

The Allergen Intervention Program[SM] incorporates integrated pest management decision-making strategies to suppress HDM populations below the medical threshold of 2,000 nanograms of HDM allergen per gram of dust, placing the indoor environment in a low-risk category for HDM allergen sensitization. Participation of occupants, installation of allergen avoidance products, manipulation of environmental conditions (relative humidities and temperatures), and use of population control agents are important methods of the Allergen Intervention Program.

Population control agents are designed to reduce target pest populations. Moreover, a long-term reduction of HDM populations theoretically will correspond with a source reduction of mita-produced aeroallergens. To identify potential population control agents, products registered with the United States Environmental Protection Agency (EPA) were reviewed.

Sumithrin® (MGK), a synthetic pyrethoid ("caution" is its label signal word), and insect growth regulators were selected for laboratory contact and residual testing at label rates for indoor flea infestation sites since HDMs inhabit similar areas.

After conducting several pilot studies to improve methodology, an insect growth regulator, Precor® (methoprene) was tested for activity against immature American HDMs, *D. farinae*, and an aerosol containing 1.5% Sumithrin® plus Nylar® (Bengal Chemical, Inc., slated for EPA registration) was tested for contact and residual efficacy on adult female *D. farinae*.

Precor performed poorly indicated by the high number of immatures and the low mortality of mites. Results indicate that Precor at current rates for flea infestations will not effectively disrupt the life cycle of the HDM.

The test for contact activity of the Sumithrin plus Nylar aerosol consisted of immobilizing the mites with adhesive on a microscope slide and spraying the compound over the mites. This yielded only 14.3% mortality when adjusted to control mortality (8%) according to Abbott's Formula, probably because the mites were dependent upon a spray droplet directly hitting them for exposure.

In a subsequent trial, mites were allowed to move freely on treated fabric for 48 hours. Mortality was scored if the mites were unable to move at least one body length when prodded. The Sumithrin plus Nylar treatment yielded 100% mortality with a 96.2% control survival.

The Sumithrin plus Nylar product was further tested for residual activity after a seven-day retreatment application. After adjusting for the 1% control mortality (Abbott's formula), the 1.5% Sumithrin plus Nylar treatment yielded 99% mortality.

These test results indicate that the 1.5% Sumithrin plus Nylar aerosol product will be an effective population control agent in the Allergen Intervention Program aimed at suppressing HDM populations.

Proceedings of the Second International Conference on Urban Pests.
K.B. Wildey (editor). 1996