

Dust mite lure technology

Summary

Dust mites are common to households throughout the world and are the primary indoor allergen source and trigger of allergic asthma, dermatitis and rhinitis. While there have been many methods to reduce exposure to dust mites and their allergens, they have often proved ineffective or toxic to individuals using them. A fast, cheap composition of chemicals that lure dust mites away from their environment, so they can be treated with an acaricide, is proposed here as an effective solution to reducing the allergen exposure.

Applications

- A simple and effective method for removing dust mites from household furnishings.

Benefits

- Provides consumers with an easy method to treat dust mites
- Low-cost formulation & non-toxic to humans

Background

House dust mites (HDMs) are found in bedding, mattresses, cushions, upholstery carpets, rugs, and other soft furnishings. They feed on shed human skin scales and release faecal particles which are the main source of allergens. HDM allergens constitute the prime cause of allergic asthma, allergic rhinitis, and allergic dermatitis. WHO have estimated a global population of 262 million asthmatic people in 2019 and, according to Asthma UK, 60% of patients say their symptoms are triggered by dust mites. HDMs are cumbersome to eliminate in households as they cling to fabric fibres, deep within carpets, mattresses and pillows and therefore cannot be easily removed with traditional methods of cleaning. They proliferate throughout the year with population peaks during spring and autumn. Many methods have been developed to control HDMs with two most popular approaches being the use of medical vacuum cleaners with high efficiency particulate air (HEPA)- filtering systems and allergen impermeable bed covers to reduce allergen exposure in beds. However, both methods have been shown to be expensive or ineffective. Therefore, a cheap, effective, and convenient method of detecting and controlling HDMs is still needed.

Technology and its advantages

The technology is a composition of semiochemicals (behaviour-modifying chemicals) which, when combined with an acaricide, is toxic to HDMs, therefore giving the ability to attract and kill mites. Application of the formulation has been shown to attract mites 5 cm deep within furniture fibres to the site of application within 20 minutes. The chemicals have been formulated in powder and liquid forms, to meet the consumer's preference of use. When applied, the proposed compound technology draws the mites from deeply embedded in furnishings to the surface where they are killed. Once killed, they can then be easily removed through traditional cleaning methods. This technology provides a simple one-step protocol for consumers to control HDMs.

Team

The team comprises inventors from the London School of Hygiene and Tropical Medicine and Rothamsted Research. These specifically include: Prof. John A Pickett (CBE, DSc, FRS), noted for his work on insect pheromones, Dr. Mike Birkett, a leading researcher on developing solutions for next generation pest management, Professor Mary Cameron, who has over 30 years' experience in vector-borne diseases, and Dr. Amanda Skelton, a former researcher in chemical ecology of house dust mites.

Patent

The technology is protected a patent (PCT publication number: WO2009/090412).