

# New developments in indoor allergen management

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INDOOR ALLERGENS HAVE been implicated in both increasing asthma prevalence and severity and the rising incidence of other allergic diseases.<sup>1</sup> In fact, researchers in Sweden have concluded that they present more of a threat to health in the northern hemisphere than pollen and hayfever because they affect people year round and are exacerbated in the winter when doors and windows are shut and the central heating is on. The major sources of indoor allergens are acarids (house dust mites), pets, insects, and moulds and fungi. Allergens differ significantly in terms of their characteristics, and patients are frequently allergic to several allergens and therefore exhibit a wide variety of symptoms. This presents a complex and difficult problem to the GP. Allergen avoidance is totally impracticable and the current costs of treatment by the NHS are unsustainable.<sup>2</sup>

### Can indoor allergens be “managed”?

The answer is yes, but this requires a clear distinction between patients who are “atopic” and patients who are “allergen hypersensitive”, and of course, a fundamental understanding of the chemical characteristics of the allergens themselves. The EAACI defines the terms as follows:<sup>3</sup>

- ❖ Atopy is a personal or familial tendency to produce IgE antibodies in response to low doses of allergens, usually proteins, and to develop typical symptoms such as asthma and rhinoconjunctivitis.
- ❖ Hypersensitivity causes objective reproducible symptoms or signs, initiated by exposure to a defined stimulus at a dose tolerated by normal subjects. Atopy is a polyclonal disease, ie,

controlled by more than one gene. Current estimates suggest that less than 2% of allergy sufferers are actually atopic, and over 98% are allergen hypersensitive.

### The nature of the allergens

There are 13 species of dust mite, three of which are very common in homes – *Dermatophagoides farinae*, *D pteronyssinus* and *Euroglyphus maynei*. Dust mites are less than 0.5mm in length and indiscernible to the eye. The residue of the dust mite is found principally in high-use areas in the home such as beds, sofas, carpets and other upholstery and to a lesser extent clothes.

In comparison, pet allergens, the second most common cause of allergic reactions, are tiny particles. Only around 18% of pet allergens adhere to furnishings or settle as dust. Over 80% become airborne for inhalation and ingestion. In this instance removal at source and reductions in the airborne load are desirable for control as well as fabric and furnishing cleansers.

### New technology on offer

In the case of dust mite, minimising fabric upholstery in the home and using specialised bedding with barrier properties are commonly recommended, along with regular aeration and cleaning of the home. However, Tovey and McDonald have demonstrated that eucalyptus and other essential oils are acaricides and can reduce the live mite population by more than 95% when incorporated into a specialised detergent prewash, even at temperatures as low as 30°C.<sup>4,5</sup> Trials by Woodfolk et al have revealed that tannic acid and benzyl benzoate denature the dust mite- and pet-derived proteins in carpets and furnishings such that the mean concentration of allergens present are reduced by at least 75% over the subsequent eight-week period.<sup>6</sup>

Research carried out on behalf of Bio-Life Europe proved that the highly charged positive particles of pet allergens can be encapsulated by a complex cationic surfactant when applied to a pet and this culminated in the launch of the Allergy UK Award winning formulation, PetalCleanse™ in 2000. In independent trials carried out by Market Research Solutions, over 97% of patients that were allergic only to pets

required no medication after a three-week period and the medication requirements of multiple allergy sufferers was reduced from 3.02 doses per week to 1.6 over the same period.<sup>7</sup>

Trials are currently ongoing to test a similar cationic solution with the addition of essential oils and tannic acid as an allergen air cleanser to further reduce the airborne load not only of pet allergen, but also of dust mite and pollen. Preliminary results suggest that the allergen airborne load can be reduced by at least 65% with Bio-Life AirCleanse™ alone, and in excess of 85% in conjunction with the pet, furnishing and laundry cleansers. The reduction in allergen load is well above the minimum target of 50% of the norm that is necessary to reduce the symptoms of allergen-hypersensitive patients to negligible proportions.

Bio-Life Europe will be launching Bio-Life AirCleanse™, FabricCleanse™ and HomeCleanse sprays and fabric conditioners throughout Europe in late September 2005 to supplement their existing range, providing the healthcare professional and their patients with one of the most comprehensive indoor allergen management packages ever produced.

For further information, please contact the Bio-Life Allergy Helpline on 01608 686626 or email sales@bio-life.co.uk ✚

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