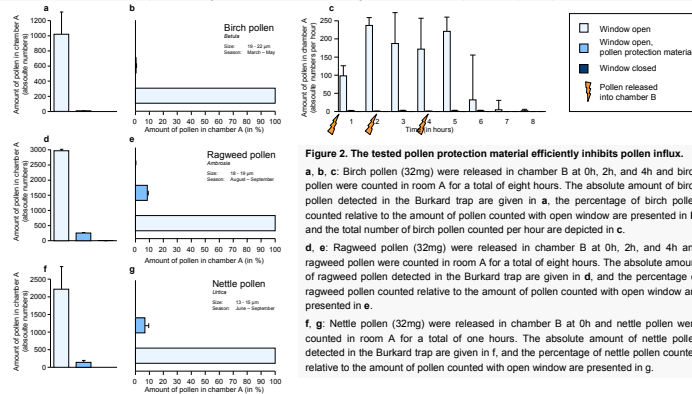


Introduction

Allergic diseases such as allergic rhinoconjunctivitis or allergic asthma are global health problems which have significant impact on patient quality of life, health-care costs, and economic productivity. In allergic patients who have been sensitized to a certain allergen, mast cells are activated after contact with the respective allergen by cross-linking of antigen-specific IgE bound to the high affinity IgE receptor FcεR1. The activation of mast cells then results in the release of a plethora of mediators, among them histamine and leukotrienes, i.e. products responsible for allergic symptoms. To prevent allergic symptoms, different approaches can be chosen alone or in combination: 1) pharmacological inhibition of mast cell mediators (e.g. receptor antagonists of histamine and leukotrienes), 2) pharmacological abrogation of mast cell activation, 3) Reduction of circulating allergen-specific IgE, and 4) Avoidance of the eliciting allergen. Obviously, the avoidance of allergens is the optimal method for the prevention of allergic symptoms; however, certain disadvantages make it difficult to achieve efficient allergen control. Here, we tested whether a light- and air-transmissible the novel textile material poll-tex® can prevent the inflow of pollen in a standardized pollen chamber.



Figure 1. Pollen chamber at the Allergie-Centrum-Charité. Room "A" represents an interior room, e.g. a living room, room "B" represents pollen-containing open air. Pollen are released in chamber B at 0h, 2h, and 4h to provide a steady state level of pollen circulating in the chamber. The pollen protective grid (poll-tex®), provided by L. von Heek, Textiles) is attached to the open window, and high concentrations of different pollen are released in the "outside" room. The amount of pollen entering room A are then assessed using a volumetric Burkard pollen and spore trap.



Results and Conclusions

- The repeated release of pollen into the "outside" room (chamber B) results in steady state levels of pollen in the air.
- The new pollen protection material poll-tex® completely blocks birch pollen (>99% inhibition of pollen inflow), and almost completely blocks nettle (>93%) and ragweed pollen (>90%).
- Even very small pollen, i.e. from nettles, are efficiently blocked from entering.
- These results indicate that the tested material could provide a significant benefit for patients suffering from pollen allergies.