At Fraunhofer ITEM the facilities include three special challenge chambers where pollen and other allergens can be dispersed in the air under controlled conditions. These chambers, known as Fraunhofer Allergen Challenge Chambers (ACCs), each are sized at 40 square meters and are among the very few technical facilities of this kind worldwide. The Fraunhofer ACCs were validated for natural grass pollen in 2001 and natural birch pollen in 2014. They have been used in numerous clinical trials to test the efficacy, duration, and onset of action of antiallergic treatments.

The Fraunhofer ACCs also enable studies with allergens that are difficult to aerosolize. We have patented a process in which a commercially available allergen solution is combined with lactose. This solution is spray-dried to create particles of a defined size which are then dispersed in the Fraunhofer ACCs. With this technique a wide range of allergens, in particular allergens that are...
difficult to aerosolize such as cat allergen or house dust mite, can be used in the Fraunhofer ACCs. Furthermore, the defined particle size allows for a challenge of either the nose or the lung.

The advantages of using the Fraunhofer ACCs

- Excellent tool to test new antiallergic treatments in early-phase clinical trials with a relevant clinical endpoint, e.g. nasal symptoms
- Performance of studies all year around – no need to wait for the right pollen season
- Small sample sizes due to the controlled atmosphere and stable pollen count
- Assessment of objective parameters such as nasal flow (rhinomanometry) and amount of nasal secretions
- Ability to assess onset of action and duration of action
- Biomarker assessments (cells and cytokines) by nasal lavage and nasal secretions in our state-of-the-art immunological lab
- Combined designs with pharmacokinetic studies to investigate the influence of nasal inflammation on drug absorption
- 100% patient compliance

Selection of publications


The Fraunhofer ITEM offers contract research in the area of human health, with an emphasis on the respiratory tract as a target organ. The focus is on toxicity testing, pre-clinical registration studies, early-phase clinical trials, GMP process development and manufacturing of biopharmaceuticals for clinical trials, regulatory support, and chemical risk assessment.

For more information: http://www.item.fraunhofer.de/respiratoryclinicaltrials