

Occupational asthma due to Subtilisine used as a contact lens cleaner

Barjau C.¹, Kilimajer J.¹, Ávila V.², Abel-Fernandez E.³, Fernandez Caldas E.³, Garcia F.¹, Subiza J.¹

1. Clínica Subiza: Centro de Asma y Alergia, Marid, Spain 2. ASEPEYO, Marid, Spain
3. Inmunotek, Marid, Spain



BACKGROUND

Subtilisin is a serine protease (protein digestive-enzyme) initially obtained from *Bacillus subtilis*, described as an allergen in different sources, including *Aspergillus*, *Penicillium* and *Cladosporium*.

In other hand there is catalase only described and accepted as an allergen in *Penicillium* (according to WHO / IUIS: www.allergen.org).

Subtilisin has been described as a cause of occupational asthma in laundry detergent industry and there is not references (medline) that imply it as a cause of asthma among manufacturers of contact lenses cleansers.

METHODS

We present a 46-year-old man, non-smoker, with no atopic backgrounds who has worked for 11 years in the maintenance services for a contact lens liquid and tablets cleaning pharmaceutical company.

For three years he has suffered from nasal symptoms as sneezing and runny nose when he used to work removing the filters from some machines.

For one year he also referred dyspnea and chest tightness attributed to the enzyme powder used to make the tablets that carry catalase (Hydrogen-peroxide oxidoreductase) and subtilisin (protease) present in the product Clear-Lens 2.5 mg.

We performed an occupational asthma study.

RESULTS

Normal basal spirometry.

Positive methacholine test with an asthmatic range (PC20 = 0.37 mg/mL).

FENO: 31 ppb (moderate inflammation)

Positive skin prick test for catalase extract (3+) and subtilisin (3+), prepared by the Lab immunotek. Negative in 5 non-atopic controls.

Bronchial provocation test (Devilbiss spray of 0.28 ml/min, tidal volume inhalation for 2 minutes:

- **Negative** with PBS (control day).

- **Positive** with Subtilisin extract at 1: 1,000,000 p/v with a decrease of FEV1 of 36% after 10 minutes with an spontaneous recovery after 2 hours and an exacerbation after 5 hours, which was maximum at 8 hours (30% decrease).

- **PC20** after 24 hours (methacoline test) showed a decrease of 0.19% mg/mL

- **FENO** : 43 ppb.

Immuno-determination revealed one band of 34 kDa in the Subtilisin extract and another of 240 kDa in the catalase extract.

The patient received the indication to stop working in the contact lens cleaning tablet rooms remaining asymptomatic for 2 months with daily PEF measurements without variations > 10%.

CONCLUSIONS

We present a case of occupational asthma due to subtilisin, a proteolytic enzyme used in the manufacturing of lens cleaners.

