

## **SPECIFIC INHALATION CHALLENGE IN PERSULFATE ASTHMA**

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### Introduction

Specific inhalation challenge (SIC) may be considered as the “gold standard” for the diagnosis of occupational asthma (OA) due to persulfate salts (PS). The aim of the study was to develop a safe SIC protocol.

### Materials and methods

Between 2003 and 2014 eight patients with suspected occupational asthma due to PS were examined (7 females, all hair-dressers). SIC was done with a dosimeter and a DeVilbiss 646 nebulizer using ammonium persulfate (APS) dissolved in phosphate buffer. Until 2009 a 4-step-protocol (doses: 0.0004, 0.0045, 0.045, 0.45 mg; cumulative: 0.5 mg) was used, afterwards a 6-step-protocol (doses: 0.0004, 0.0018, 0.007, 0.028, 0.113, 0.45 mg; cumulative: 0.6 mg). With each SIC protocol 4 subjects were tested. Skin prick tests (SPT) with APS (20 mg/mL) were performed in all and patch tests (Hermal, Reinbek, Germany) in 4 subjects.

### Results

In total, 4 subjects showed a positive SIC, two with each protocol. All subjects showed an isolated late reaction. The greatest decrease of FEV<sub>1</sub> was 40% about 3.5 hours after the last inhalation (4-step-protocol). SPT with APS was positive in one SIC<sub>pos</sub> (2 mm wheal) and in two SIC<sub>neg</sub> patients (3 and 4 mm wheal). All 4 subjects tested with patch tests showed a positive reaction; three of them were SIC<sub>pos</sub>.

### Discussion

We recommend to include patch-testing in the diagnosis of suspected OA due to PS. Isolated late asthmatic reactions may occur after SIC. The proposed 6-step SIC protocol was safe in this limited number of subjects.