

European Respiratory Society Annual Congress 2012

Abstract Number: 509

Publication Number: P4359

Abstract Group: 6.2. Occupational and Environmental Health

Keyword 1: Occupation **Keyword 2:** Asthma - mechanism **Keyword 3:** Inflammation

Title: Persistence of functional and inflammatory response in mice dermally sensitized to persulfate salts

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Body: Introduction: Years after removal from exposure, patients with occupational asthma (OA) still can show respiratory symptoms and bronchial hyperresponsiveness on re-exposure to the causal agent. The aim of the study was to assess the persistence of respiratory symptoms in an animal model of occupational asthma due to persulfate salts. Material and methods: BALB/c mice received dermal applications of ammonium persulfate (AP) or dimethylsulfoxide (DMSO) (control) on days 1 and 8. They then received a single nasal instillation of AP or saline on day 15, 22, 29, 36, 45 or 60. The ventilatory pattern was monitored immediately after the challenge in a whole body plethysmography (40 min.). Bronchial hyperreactivity was measured 24 hours afterwards using a non-specific methacholine provocation test. Pulmonary inflammation was assessed by analysis of bronchoalveolar lavage (BAL). Results: Mice dermally sensitized and intranasally challenged with AP showed bronchial hyperreactivity to methacholine and increased percentage of neutrophil in BAL as long as 45 days after initial sensitization, compared with the control group. At day 60, mice were still bronchially hyperresponsive, while the percentage of neutrophils fell to levels similar to those in the control groups. Conclusions: Pulmonary inflammation decreased with increasing intervals between dermal sensitization and the challenge with AP, despite the persistence of hyperresponsiveness. Study funded by FIS PI080730.