

**Asthma, respiratory allergy and cough**

**Cough In Guinea Pigs Sensitized By House Dust Mite Particles As Part Of Development And Validation Of New Model Of Airway Hypersensitivity**

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**Background:** The most widely used model to study cough is guinea pig sensitized by ovalbumin. Guinea pig as a model is the best choice for cough studies, as the neurophysiology and neuropharmacology of vagus nerve is the closest to humans. However, the choice of antigen is questionable. The choice of the model influences translation of results and there is need to develop more suitable models.

**Methods:** 30 guinea pigs (Dunkin-Hartley, males) were divided into HDM group, ovalbumin (OVA) group and control group based on their cough response to 0.4M citric acid. In HDM group animals were sensitized by 0.25% HDM aerosol (Greer Labs, USA), which they inhaled for 5 min over 5 days, followed by inhalation of 0.5% HDM in same protocol. Sensitization was confirmed by skin test. In skin test positive animals the symptoms of allergic rhinitis were induced by intranasal application of HDM (0.5%; 15µL) and cough challenges with citric acid were performed. Airway resistance was measured *in vivo* by Pennock's method. Data were compared to OVA sensitized and control groups.

**Results:** HDM and OVA sensitized groups showed significantly enhanced nasal reactivity and cough response when compared to controls. Airway resistance data did not show significant differences.

**Conclusions:** HDM inflammation model in some aspects replicates OVA model functional consequences to the airway sensitivity and reactivity. This model still needs an extensive work to validate it, but based on the data, it seems to be comparable and more suitable model to study cough physiology and pathophysiology than OVA model.

**Key words:** cough, animal model, guinea pig, house dust mites, airway hyperreactivity