

# Dog sensitization and allergy to mites: do they respond the same way to poultry red mite as to house-dust and storage mites?

Martins LM<sup>1,2</sup>, Ventura AC<sup>1</sup>, Brazis P<sup>3</sup>, Cerrato S<sup>3</sup>

1. Department of Veterinary Medicine, School of Sciences and Technology
2. ICAAM, University of Évora, Évora, Portugal
3. Laboratorios LETI, Barcelona, Spain

## Introduction

***Dermanyssus gallinae* (Der g), the European poultry red mite (PRM)**, is a common ectoparasite of laying chickens and pigeons but can also feed on other birds, humans (1,2,3) and domestic animals like cats (4), dogs (5,6,7) horses (8), goats (9) and rabbits (10), causing from mild discomfort to severe dermatitis, with possible transmission of several infectious zoonotic agents (11,12).

**Affected dogs** mostly show a flea-like allergy pattern (5) but very little is known about a possible type I hypersensitivity or eventual cross-sensitization with house-dust or storage mites.

Investigating on **IgE-mediated allergy** to PRM in dogs is important for both veterinary and human health, since potential IgE-mediated allergy in humans and their dogs, with possible cross-sensitization with dust and storage mites may allow a better clinical approach.

## Aim

**Testing for specific IgE (sIgE) to clarify:**

- i) Possible evidence of type I hypersensitivity to PRM in dogs.
- ii) The possible occurrence of cross-sensitization between PRM and dust and storage mites.

## Materials and Methods

**Sixteen non-atopic dogs** with long-lasting contact with chickens from traditional bird houses and 5 control dogs from an allergy outpatient consultation, without direct contact with birds.

**Intradermal testing** with extracts from: Blo t, Der p, Der f, Lep d, Aca s, Tyr p (Diater, Spain) and Der g (1, 0.5, 0.1 and 0.01 mg/mL – LETI Animal Health Laboratories, Spain)

**Serum specific IgE** to PRM was determined by ELISA at LETI Animal Health Laboratories (Spain).

## Results

### PRM – IDT

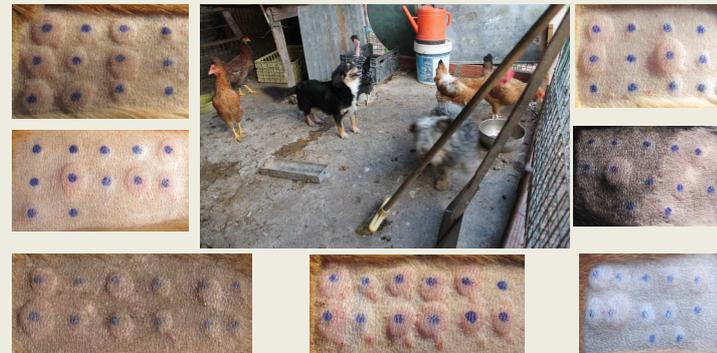
- i) **Control dogs:** 3 positive and 2 negative (with every concentration).
- ii) **Chicken-contacting dogs:** 10 positive with 0.1 mg and 6 with 0.01 mg/mL; 1 positive just for 1 mg/mL; 1 positive only for 0.1 and 0.01 mg/mL; 5 negative for all concentrations.
- iii) **Response showed gradual** between 0.1 and 0.01 mg/mL.

### PRM – sIgE

- i) **Control dogs:** detected in 1 patient (20%).
- ii) **Chicken-contacting dogs:** 7 (44%).

**No significant correlation was found between PRM and dust and storage mites IDT, and between IDT and sIgE to PRM.**

## Chicken-dogs IDT (Illustrative)



**IDT sequence: From left to right: Blo t, Der p, Der f, Lep d, Aca s, Tyr p, positive, negative and Der g (1, 0.5, 0.1, 0.01 mg/mL)**

## Conclusions

- i) **The more adequate PRM IDT extract concentration** is probably in the 0.1-0.01 mg/mL range.
- ii) **Close contact with infested chickens**, hence with PRM may conduce to a possible state of sensitization with sIgE without allergy.
- iii) **Sensitization and allergy to PRM** seemed independent from their equivalent to dust and storage mites.

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