

# Dog allergy to meat: is IDT and sIgE of any usefulness?

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## INTRODUCTION

A more or less localized inflammatory skin condition will characterize atopic, contact [1,2] or food-induced [3,4] dermatitis. **Pruritus** stands as the main complaint associated with dermatitis due to **atopy**, **food**, **flea**, **Malassezia** or **contact allergy** in dogs [5]. However, it is estimated that around 10-15% of food allergic dogs will present **digestive signs** [6]. Current **diagnosis of Canine Atopic Dermatitis** has been based on **clinical history** and **exclusion of other causes of dermatitis**, such as parasitic or bacterial infections and food intolerance [1,5]. Identification of IgE-mediated cutaneous reactivity by **intradermal tests (IDT)** and serological determination of **allergen-specific IgE (sIgE)** are also useful for more specific diagnosis, especially when specific immunotherapy is intended for atopy control [7,8]. Cutaneous adverse food reactions are a current problem in dogs, with beef, dairy products, chicken and wheat as the most implicated food components [9]. As in humans, cutaneous and serological tests by themselves do not show enough individual diagnostic reliability for the diagnosis of food allergy [5]. Elimination or hypoallergenic diets have been the proposed tool for food allergy diagnosis [10]. A wider diagnosis approach, including dietary restriction-provocation trials, is often necessary to identify the specific food implicated [9].

## AIM

Evaluation of combined clinical history, IDT and sIgE, along with dietary restriction-provocation trials for faster reliable food allergy diagnosis.

## METHODS

From 85 dogs attending the Veterinary Hospital of the University of Évora (Portugal) and Rof Codina University Hospital (Lugo, Spain) outpatient consultations, 11 (5 males and 6 females) were selected by means of clinical inquiry and IDT for probable food allergy. All of them presented with pruritic dermatitis and at least 6 of the Favrot's criteria for atopic dermatitis. None of them showed noticeable digestive signs. IDT were performed for at least Dac g, Phl p, Der f, Der p, Aca s, Tyr p, Lep d, beef, pork, lamb, chicken, egg and milk. sIgE panels were determined in a commercial lab for pollens, molds and mites. Assessment of sIgE for beef, pork, lamb and chicken was performed in Dot Blots as follows: i) 2 µL spots 500 µg/mL meat extract per Dot on NC strips; ii) 2h incubation with individual sera at 1:10; iii) 2h incubation 1:1000 Biotinylated mouse McAb anti-dog IgE; iv) 1h incubation with 1:5000 streptavidin-alkaline phosphatase and v) development with NBT/BCIP in chromogenic buffer. sIgE cut-off was 150 EAU. Intensity of IDT (Fig. 1) and DOT Blots (Fig. 2) were scored 1-4. Dot Blot controls were used without sera and without sera and McAb anti-dog IgE and results were read by 3 separate people at 15 min development time.

## RESULTS

Table: Patient sIgE, IDT and Dot Blot scores

Dog No.	Grass				Mites										Food												
	Dac g		Phl p		Der f		Der p		Aca s		Tyr p		Lep d		beef		pork		lamb		chicken		egg		milk		
	IgE	IDT	IgE	IDT	IgE	IDT	TIgE	IDT	IgE	IDT	IgE	IDT	IgE	IDT	IDT	Dot	IDT	Dot	IDT	Dot	IDT	Dot	IDT	Dot	IDT	Dot	
1	159		262		987		172		791		810				2	3		2		1				1		1	
2				3											3	4		3		4			1				
3	880		1685		1863	3	502	3	3733	4	3635		137		4	4	3	4		3	3	2	2				
4		1		1	327				217	1					3	4	3	3		3	2	2					
5	602	1	393		3481		403	1	3509	1	3478		142	2	3	4	4	3		3	2	2					
6											205				4	4	4	4		3	3	2	2				
7		4				4		4		2		3		3	3	4		3	2	4							
8						2		3							3	3		3		1		1				1	
9		1		1		1		1					2		4	4		3	1	3	1	1	1	1			
10																3		4	1	3	1	1	1	1			
11						3		3							3	4	1	4	2	4							

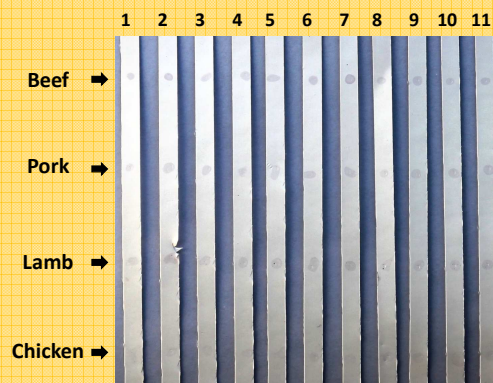


Fig 2: Patient (No. 1 to 11) Dot Blots (30 min development)

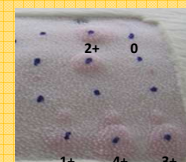


Fig 1: IDT scores (e.g. 15 min after inoculation)

Mean sIgE (EAU) was Dac g=547, Phl p=601, Der f=1665, Der p=297, Aca s=2063, Tyr p=1644 and Lep d=105. IDT were found positive in 4 patients (Dac g), 3 (Phl p), 5 (Der f), 6 (Der p), 4 (Aca s), 1 (Tyr p), 3 (Lep d), 10 (beef), 5 (pork), 5 (lamb), 6 (chicken), 4 (egg) and 2 (milk). sIgE Dot Blots showed positive for all patients to beef, pork and lamb, and in 8 of them to chicken. Semi-quantitation was found possible in Dot Blots. Strong **positive correlation** was observed between sIgE and IDT to Der p ( $r=0,881$ ;  $p=0,048$ ), IDT and Dot Blots to beef ( $r=0,702$ ;  $p=0,015$ ) and to chicken ( $r=0,878$ ;  $p=0,0003$ ), and the intensity of Dot Blots between beef and lamb ( $r=0,800$ ;  $p=0,006$ ). Semi-quantitative difference was found between meat sources for mean IDT/Dot Blots scores: beef (3.2/3.73), pork (3/3.27), lamb (1.8/2.91) and chicken (1.8/1.3). In dogs presenting positive IDT to beef, pork, lamb or chicken, avoidance of those specific meats was recommended, with **significant clinical improvement, especially when beef or chicken were implicated**.

## CONCLUSIONS

Combined sIgE assessment, by *in vivo* (IDT) and *in vitro* (Dot Blot) methods may be useful and faster diagnosis tools, which, together with dietary restriction-provocation trials, could help in the diagnosis of food allergy as in several clinical cases positive results revealed predictive.

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