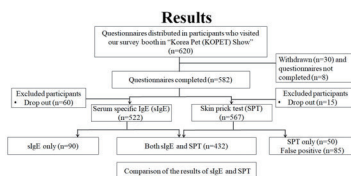


# Serum specific IgE is more reliable than skin prick test in diagnosing dog and cat allergies

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**Background/Aims:** Dog and cat allergies affect 10-20% of population worldwide. However, compared to other allergies, diagnostic roles of serum specific IgE (sIgE) and skin prick test (SPT) in dog and cat allergies are not sufficiently evaluated yet. The objective of this study is to evaluate these roles in Korean adults with dog or cat allergies. **Methods:** A total of 582 participants who attended 2018 pet exhibition in Korea were asked to answer questionnaires regarding dog and cat allergies, to undergo SPT, and to have their blood drawn for sIgE measurements to evaluate sensitization to dog and cat allergens. We measured serum levels of sIgE using ImmunoCAP<sup>®</sup> (ThermoFisher, Uppsala, Sweden) and performed SPTs using three commercial allergen extracts available in Korea (Lofarma, Milano, Italy; Hollister-Stier, Spokane, WA, USA; Bencard, Bradford, UK). Mean wheal diameter equaled to or more than 3 mm, allergen-histamine ratio (AHR) equaled to or more than 1 or any wheal at 15 minutes in SPT, and sIgE levels equaled to or more than 0.01, 0.35 or 3.5 kU/L were considered to indicate positive results, respectively. **Results:** In dog allergies, the highest values of positive predictive value (PPV), negative predictive value (NPV), sensitivity (Sn) and specificity (Sp) were 43.8%, 84.2%, 46.2% and 97.5% in SPTs, respectively, and 58.3%, 88.8%, 67.6% and 94.0% in sIgE measurement, respectively. With SPTs and sIgE measurement put together, the highest of these values were 32.2%, 90.2%, 70.5% and 64.3%, respectively. In cat allergies, the highest values of PPV, NPV, Sn and Sp were 52.0%, 86.5%, 61.3%, and 95.6% in SPTs, respectively, and 58.5%, 90.3%, 75.4%, and 91.5% in sIgE measurement, respectively. With SPTs and sIgE measurement put together, the highest of these values were 41.0%, 91.7%, 80.9% and 66.4%, respectively. **Conclusions:** In diagnosing dog and cat allergies, measurement of sIgE is generally more reliable than SPT. With combination of two modalities, only a little improvement of Sn and NPV can be obtained.



Demographic characteristics of subjects (n= 582)		
Age (years)	Mean (SD)	30.4 ± 9.3
	≤ 19	59 (10.1%)
	20-29	253 (43.5%)
	30-39	181 (31.1%)
	40-49	66 (11.3%)
	50-64	21 (3.6%)
	≥ 65	2 (0.4%)
Gender	Female	464 (79.7%)
	Male	118 (20.3%)
Ever diagnoses of allergic diseases		
	Allergic rhinitis	64.8%
	Allergic conjunctivitis	38.9%
	Atopic dermatitis	17.2%
	Food allergy	11.3%
	Asthma	9.2%
	Chronic urticaria	6.2%
	Drug allergy	4.1%
Family history of allergic diseases		
		42.8%

Allergic symptoms during exposure to pets (n= 58)		
Dog	Asthy	114 (19.4%)
	Rhinitis symptoms	81.6%
	Conjunctivitis symptoms	64.9%
	Urticaria symptoms	55.3%
	Cough	29.8%
Cat	Asthma symptoms	14.5%
	Others	1.75%
Cat	Asthy	134 (23.0%)
	Rhinitis symptoms	76.9%
	Conjunctivitis symptoms	69.4%
	Urticaria symptoms	53.7%
	Cough	27.6%
	Asthma symptoms	15.7%
	Others	0.8%

**Table. Diagnostic values in dog allergy**

	PPV	NPV	Sn	Sp	Agreement with previous or absence of cat allergy
SPT only (n=50)	20.7	84.2	46.2	97.5	50.0
sIgE only (n=90)	58.3	88.8	67.6	94.0	50.0
Both sIgE and SPT (n=432)	32.2	90.2	70.5	64.3	50.0

**Table. Sensitization rates to dog and cat allergens**

	Dog	Cat
Questionnaire	14.9%	14.9%
SPT	14.9%	14.9%
sIgE	14.9%	14.9%

**Table. Use of allergen extracts used in skin prick test**

	Questionnaire	SPT	sIgE
Lofarma	14.9%	14.9%	14.9%
Hollister-Stier	14.9%	14.9%	14.9%
Bencard	14.9%	14.9%	14.9%

PPV: positive predictive value, NPV: negative predictive value, Sn: sensitivity, Sp: specificity, Ag: agreement with previous or absence of cat allergy