

High prevalence of allergen-specific IgE antibodies against storage mites in Danes

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Objective: To analyse for sensitisation to 13 different allergens among both asthmatic subjects and general population.

Method: In a cross sectional study of risk factors for asthma in adults (ECRHS protocol) the distribution of allergen-specific IgE antibodies (IgE) and skin prick test (SPT) was analysed. A screening questionnaire was sent to a random sample of 2000 subjects from the county of Northern Jutland aged 20-44. A random sample of 20 percent of the responders and all with current asthma or earlier asthma with onset after the age of 15 were invited to participate in a health examination. Of 408 invited 228 participated, 144 from random sample and 101 belonged to the group with current or adult-onset asthma.

We performed tests for allergen-specific IgE antibodies (positive at ≥ 0.35 kU/l) against storage mites, latex and allergens in Allergy Screen assay® (Bayer) (animal dander, pollens, house dust mites and mildew moulds) and we performed SPT (positive at mean ≥ 3 mm) the same 13 allergens.

These allergens were compared with anamnestic information on symptoms of current asthma (asthma attack, waking up at night and medicine usage, all within the last 12 months) and presence of allergies in nose, including hayfever.

Results: The participation rate was higher among women compared to men, but age-distribution and smoking habits did not differ between the genders (Table 1).

Table 1 Demographic data of the cohort N=228

	Female n=126	Male n=102
Smoker	43 (34 %)	33 (33 %)
Former smoker	22 (17 %)	15 (15 %)
Never smoker	63 (50 %)	52 (53 %)
Age (mean (SE))	33.4 (0.5)	33.7 (0.7)

Self reported asthma symptoms were most common among female participants with 36 % compared to 22 % in males. Hayfever was reported by 42 % of females and 34 % of males.

Table 2. Prevalence of sensitisation, in blood sample and in skin prick test. Comparison of the two test methods shown as kappa-values (comparison of observed and expected associations). * marks allergens in Danish standard examination programmes.

Allergen	Random sample and subjects with current asthma			Subjects with current asthma		
	Positive IgE (%) all N=215	Positive SPT (%) all N=223	Association between IgE and SPT (Kappa)	Positive IgE (%) n=63	Positive SPT (%) n=66	Association between IgE and SPT (Kappa)
Acarus siro	25 (12)	4 (2)	-0.03	12 (19)	0 (0)	-
Lepidoglyphus destructor	48 (22)	23 (10)	0.25	17 (27)	10 (15)	0.33
D.pteronysinus *	35 (16)	41 (18)	0.80	17 (27)	17 (26)	0.88
D. farinae *	39 (18)	44 (20)	0.74	19 (30)	19 (29)	0.77
Grass *	48 (22)	60 (27)	0.79	22 (35)	22 (33)	0.86
Birch *	33 (15)	36 (16)	0.78	16 (25)	14 (21)	0.72
Mugwort *	20 (9)	22 (10)	0.86	8 (13)	9 (14)	0.92
Cat *	24 (11)	32 (14)	0.82	11 (17)	16 (24)	0.69
Horse *	10 (5)	9 (4)	0.48	5 (8)	6 (9)	0.64
Dog *	12 (6)	40 (18)	0.24	7 (11)	22 (33)	0.10
Alternaria *	16 (7)	15 (7)	0.93	11 (17)	11 (17)	0.94
Cladosporium *	3 (1)	3 (1)	1.0	2 (3)	2 (3)	1.0
Latex	3 (1)	2 (1)	-0.01	1 (2)	1 (2)	-0.02

Table 2 describes the distribution of sensitisation to all examined allergens by the two methods both in the total cohort and in the subsample with current asthma, and the association between the methods. Testing with allergens of storage mites are not included in Danish standard examination programs, but were one of the most common sensitisations, especially *Lepidoglyphus destructor*. As expected, sensitisations were more common in asthmatics.

Table 3 shows that odds ratios of sensitisation towards storage mites are less common than towards house dust mites in persons with allergic symptoms.

Table 3. Occurrence of sensitisation on current asthma and hayfever. Crude odds ratio (95 % CI)

	At least reactions to one of all 13 allergens		At least reactions to one House dust mite- allergen		At least reactions to one storage mite-allergen	
	IgE	SPT	IgE	SPT	IgE	SPT
Current asthma						
all	2.9 (1.6-5.4)	3.1 (1.7-5.6)	2.7 (1.3-5.4)	2.1 (1.1-4.0)	1.6 (0.8-3.1)	1.7 (0.7-4.0)
female	3.3 (1.5-7.4)	3.4 (1.6-7.2)	3.1 (1.2-8.4)	2.9 (1.2-7.6)	1.5 (0.7-3.7)	2.4 (0.6-8.9)
male	2.8 (1.0-7.8)	3.5 (1.2-10)	2.7 (0.8-7.7)	2.0 (0.8-5.2)	1.7 (0.6-4.8)	1.5 (0.6-5.6)
Hay fever						
all	6.6 (3.6-12)	8.5 (4.6-15)	5.2 (2.5-11)	5.0 (2.5-9.7)	1.1 (0.6-2.0)	2.7 (1.2-6.2)
female	5.3 (2.4-12)	7.8 (3.5-18)	12 (3.3-40)	12 (3.6-41)	0.8 (0.3-1.9)	5.4 (1.1-27)
male	10 (3.7-30)	13 (4.5-37)	3.1 (1.5-8.7)	3.6 (1.5-8.7)	1.5 (0.6-3.8)	2.2 (0.8-6.3)

Conclusion: High sensitisation rates for storage mites were found in both random sample and in asthmatic subjects. Although this sensitisation was not significantly related to allergic symptoms it is suggested that *Lepidoglyphus destructor* and *Acarus siro* should be included in allergy-screening programmes in temperate climates.