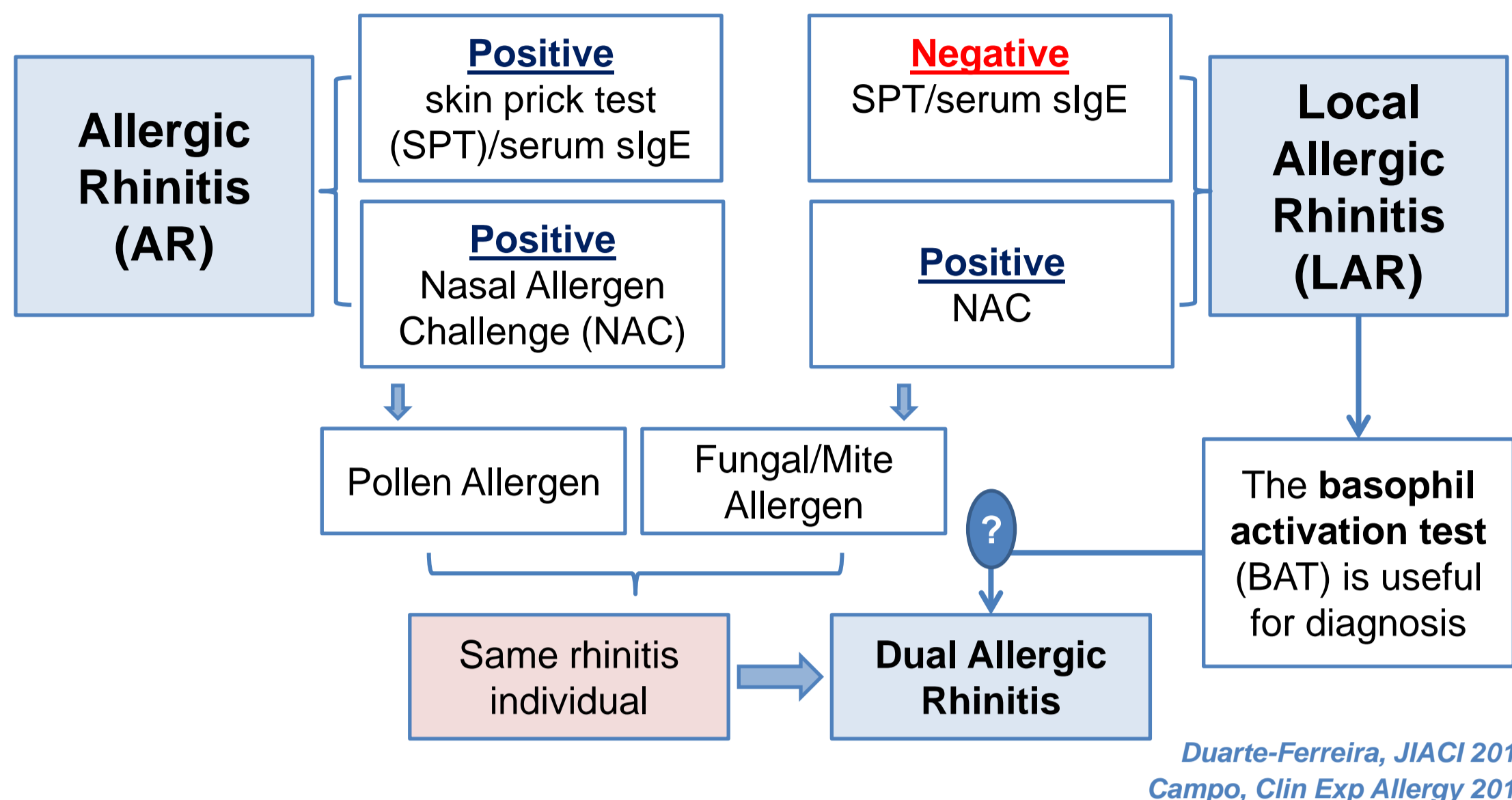


# Background

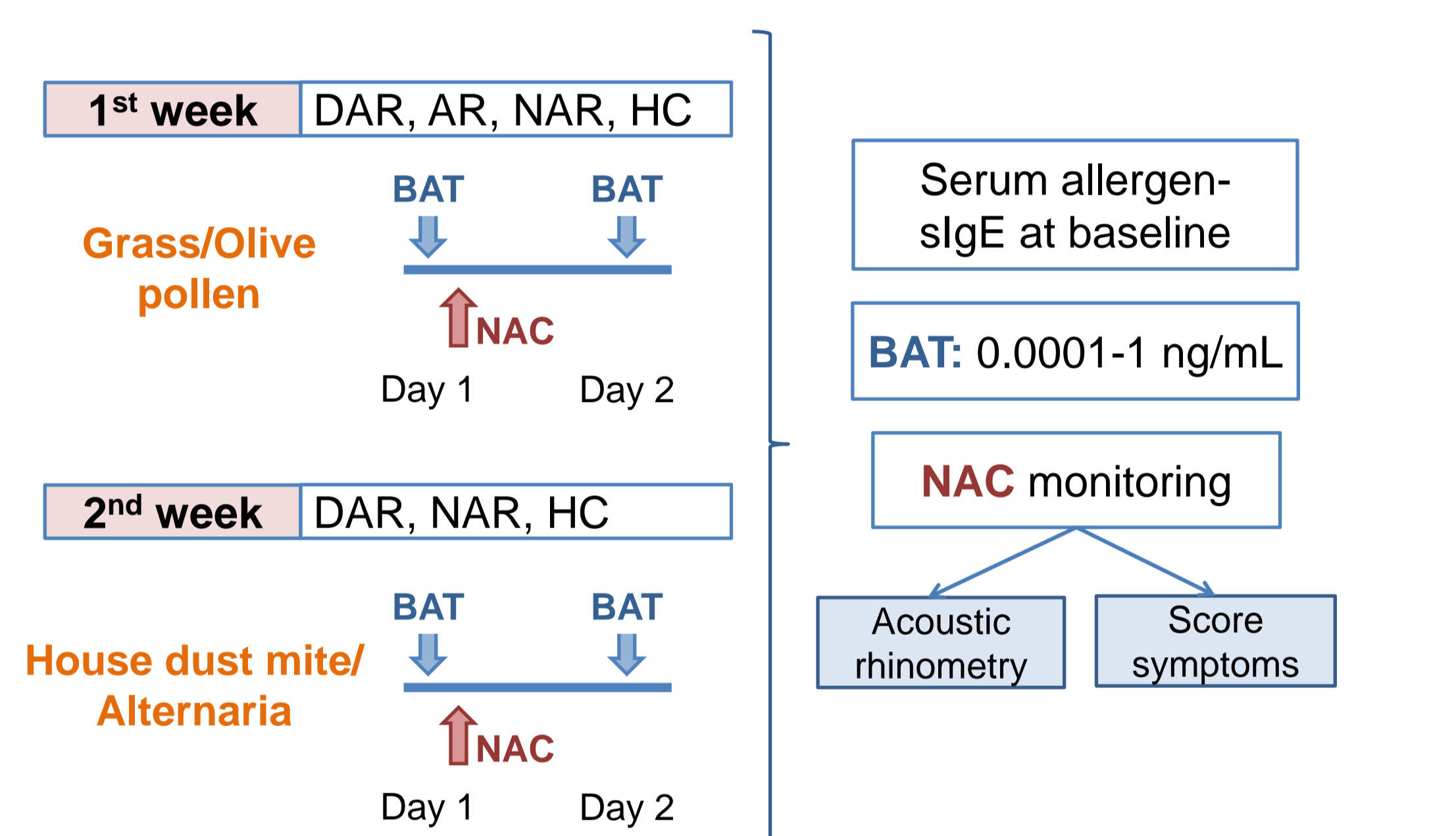
Allergic rhinitis (AR) and local allergic rhinitis (LAR) are well defined rhinitis phenotypes. Nevertheless, some AR patients with perennial symptoms, but with positive skin prick test (SPT) only to seasonal allergens, display positive nasal allergen challenge (NAC) to both seasonal and perennial allergens. We propose the term **dual allergic rhinitis (DAR)** for this new phenotype. Nevertheless, the response of peripheral basophils never has been tested before.



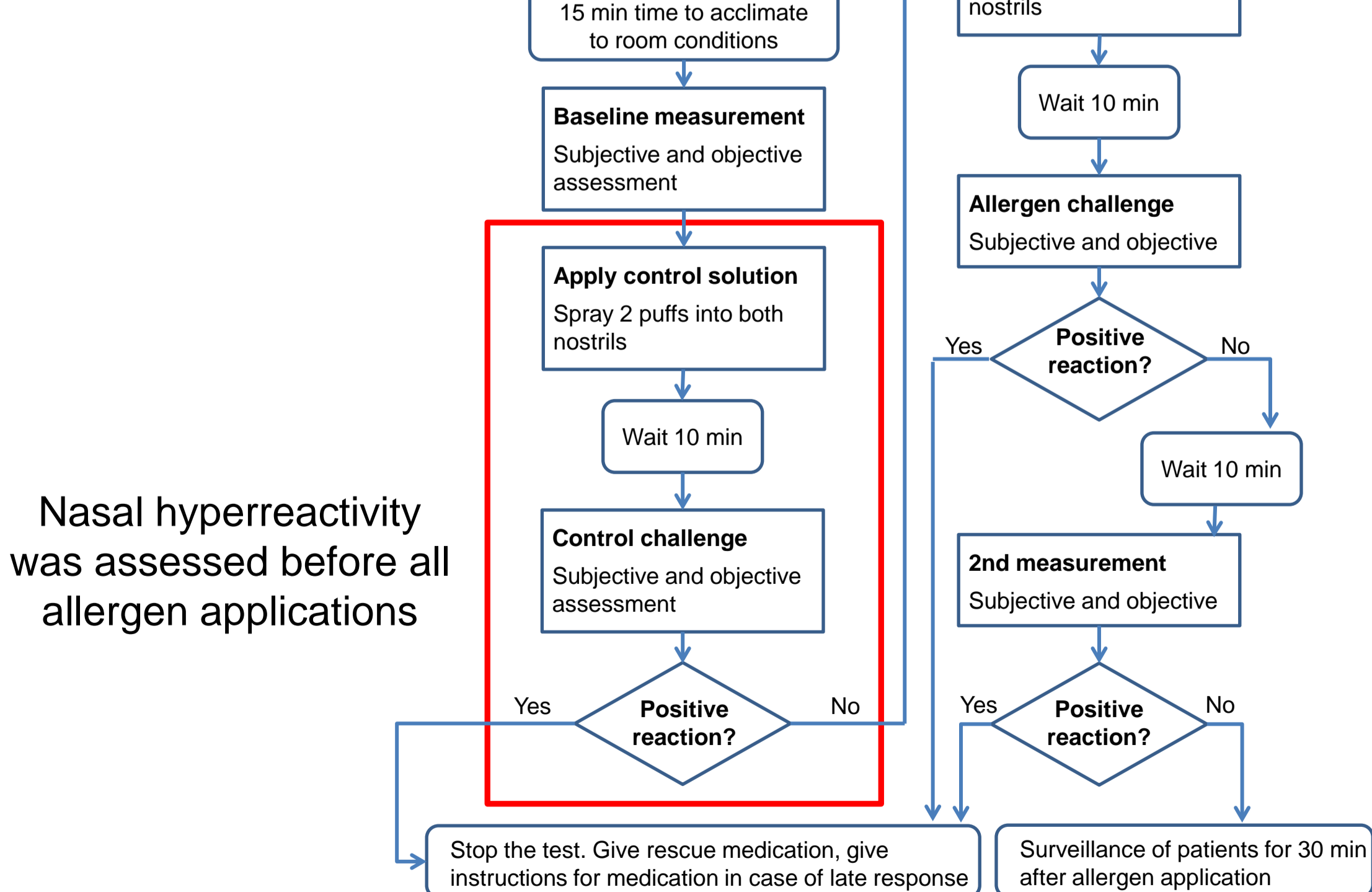
# Aim of study

To evaluate the response of peripheral basophils to allergens in **dual allergic rhinitis (DAR)** patients

# Materials & Methods



# NAC protocol



Augé, Allergy 2018

# P228 Coexistence of Nasal Reactivity to Allergens with and without IgE-sensitization in Allergic Rhinitis patients

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# Results

## 1 | Clinical characterization

### 1.1. Individuals included in the study

- ✓ Perennial rhinitis symptoms
  - ✓ Seasonal exacerbation
  - ✓ Positive SPT to olive/grass pollen only
- N = 48 subjects**

### 1.3. NAC with perennial allergens

- ✓ **Positive** NAC with perennial allergens (**GROUP A**)
  - ✓ **Negative** NAC with perennial allergen (**GROUP B**)
- N = 41 subjects**      **N = 7 subjects**

	Study subjects N = 48
Female gender, N (%)	32 (66)
Age (y), mean (SD)	31.30 (10.9)
FHA, N (%)	19 (39.6)
Urban dwelling, N (%)	33 (68.8)
Urban employment, N (%)	38 (79.2)
Smoking habit, N (%)	
Non-smoker	40 (83.3)
Ex-smoker	4 (8.5)
Current smoker	4 (8.5)
Time of evolution (y), mean (SD)	8 (8.2)
Severity of seasonal symptoms, N (%)	
Mild	4 (8.3)
Moderate	32 (66.7)
Severe	12 (25)
Severity of perennial symptoms, N (%)	
Mild	16 (33.3)
Moderate	28 (58.3)
Severe	4 (8.3)
Rhinitis evolution, N (%)	
From seasonal to perennial	25 (52.1)
Perennial with seasonal exacerbation since rhinitis onset	23 (47.9)
Co-morbidities, N (%)	
Conjunctivitis symptoms	31 (64.6)
Asthma symptoms	18 (37.5)
Triggering factors, N (%)	
Vegetation	34 (70.8)
House dust	26 (54.2)
Temperature changes	8 (16.7)
Irritant smells	15 (31.3)
Dampness	9 (18.8)

**Table 1.** Demographic and clinical characteristics of the 48 subjects included in the study. FHA, family history of atopy; N, number; SD, standard deviation.

### 1.2. NAC with seasonal allergens

- ✓ NAC with grass pollen
- ✓ NAC with olive pollen
- ✓ Concordance NAC and SPT results

	Group A (N=41)	Group B (N=7)	P value
Female gender, N (%)	29 (70.7)	3 (42.9)	0.201
Age (y), mean (SD)	32.2 (12.0)	47.71 (16.8)	<b>0.023</b>
FHA, N (%)	16 (39)	3 (42.9)	1.000
Urban dwelling, N (%)	30 (73.2)	3 (42.9)	0.183
Urban employment, N (%)	30 (73.2)	3 (42.9)	0.183
Smoking habit, N (%)			
Non-smoker	33 (80.5)	7 (100)	1.000
Ex-smoker	4 (9.8)	0 (0)	
Current smoker	4 (9.8)	0 (0)	
Time of evolution (y), mean (SD)	8.8 (8.9)	5.3 (3.2)	0.549
Severity of seasonal symptoms, N (%)			0.686
Mild	4 (9.8%)	0 (0)	
Moderate	27 (65.9)	5 (71.2)	
Severe	10 (24.4)	2 (28.6)	
Severity of perennial symptoms, N (%)			0.897
Mild	14 (34.1)	2 (28.6)	
Moderate	23 (56.1)	5 (71.4)	
Severe	4 (9.8)	0 (0)	
Rhinitis evolution, N (%)			<b>0.044</b>
From seasonal to perennial	24 (58.5)	1 (14.3)	
Perennial with seasonal exacerbation since rhinitis onset	17 (41.5)	6 (85.7)	
Co-morbidities, N (%)			
Conjunctivitis	28 (68.3)	3 (42.9)	0.226
Asthma symptoms	16 (39)	2 (28.6)	0.696
Triggering factors, N (%)			
Vegetation	30 (73.2)	4 (57.1)	0.400
House dust	24 (58.5)	2 (28.6)	0.223
Temperature changes*	3 (7.3)	5 (71.4)	<b>0.001</b>
Irritant smells*	10 (24.4)	5 (71.4)	<b>0.024</b>
Dampness	8 (19.5)	1 (14.3)	1.000

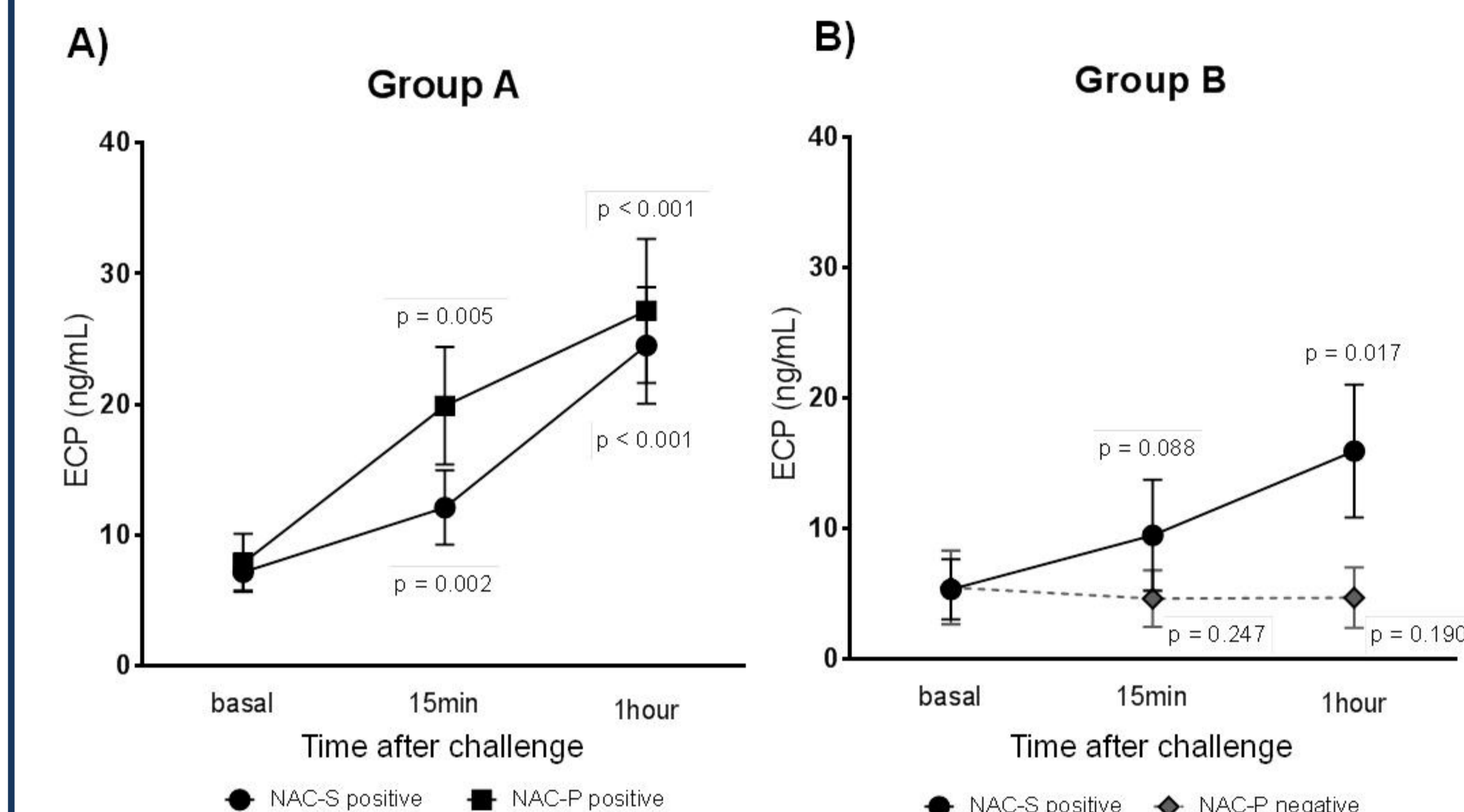
**Table 2.** Comparative features of individuals of groups A and B from the study group. Bolditalics identifies comparisons in which statistical significance was found. FHA, family history of atopy; N, number; NAC-P, nasal allergen challenge with perennial allergen; NAC-S, nasal allergen challenge with seasonal allergen; SD, standard deviation.\*During all the year.

# Conclusions

This study shows that nasal reactivity to aeroallergens with and without positive SPT can coexist in the same patient. We propose the term **dual allergic rhinitis** for this phenotype.

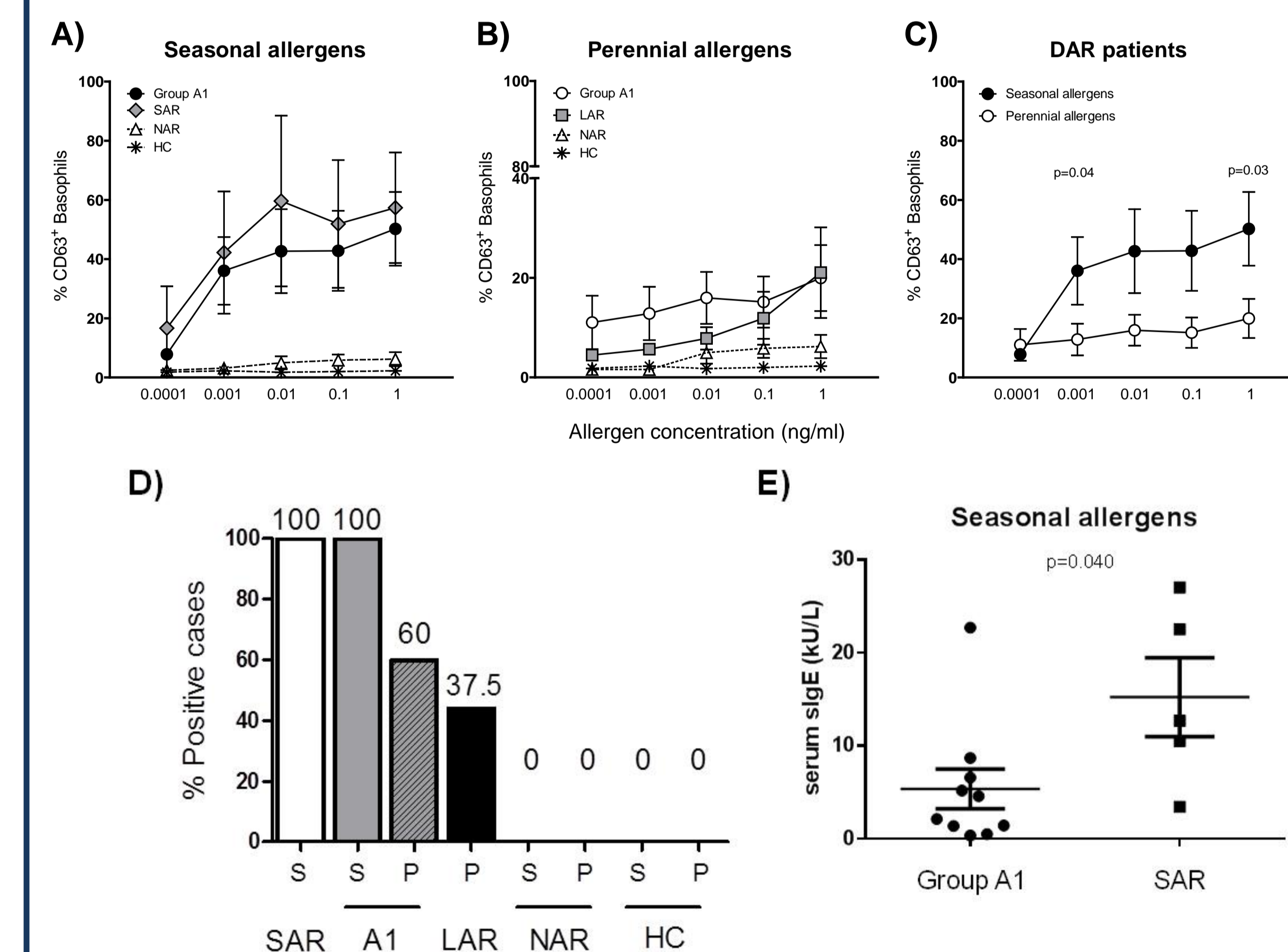
## 2 | Immunological characterization

### 2.1. Local level



**Fig 1.** Concentration of eosinophil cationic protein (ECP) in the nasal lavage after nasal challenge with seasonal allergens (NAC-S) and nasal challenge with perennial allergens (NAC-P) in individuals from groups A (A) and B (B)

### 2.2. Peripheral level



**Fig 2.** Peripheral immune characterization of patients with different rhinitis phenotypes.

- A:** Basophil activation test (BAT) with seasonal allergens (olive or grass pollens) in group A1, seasonal allergic rhinitis (SAR), nonallergic rhinitis (NAR), and healthy nonatopic control (HC) subjects;
- B:** BAT with perennial allergens (*Dermatophagoides pteronyssinus* or *Alternaria alternata*) in group A1, perennial local allergic rhinitis (LAR), NAR, and HC subjects.
- C:** BAT with seasonal and perennial allergens in individuals from group A1.
- D:** Proportion of individuals with positive BAT among different rhinitis phenotypes. Stimulation index  $\geq 2$  was required for a BAT to be considered positive. S, seasonal allergen; P, perennial allergen.
- E:** serum allergen-specific IgE in patients from group A1 and SAR subjects

\* Group A1: group A with positivity to only one perennial allergen

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