CARBAMYLATED MONOMERIC DERMATOPHAGOIDES ALLERGOID:
A TOLERABILITY STUDY WITH A DEPOT FORMULATION BY SUBCUTANEOUS ROUTE

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Purpose of the study
Aim of this study was to assess the tolerability of a carbamylated monomeric allergoid given by **subcutaneous route** to patients with allergic rhinitis with or without asthma.

Methods
We evaluated, in a prospective open-label phase II study, lasting 16 weeks, 45 patients (16M/29F, age: 18-49 years, mean age: 33.6 years), suffering from allergic rhinitis with (21) or without asthma (24) mainly due to house dust mites.

The patients were given subcutaneously, during the first 12 weeks of the study, an increasing dose (0.1, 0.3, 0.5, 0.8 mL at 100, 1000 and 10,000 CU/mL) of the carbamylated monomeric allergoid (**Lais-*in***, Lofarma S.p.A., Italy) and then, during the last 4 maintenance weeks, a fix dose of 0.8 mL (at 10,000 CU/mL) in a weekly rate.

The monomeric allergoid is obtained by carbamylation with potassium cyanate at alkaline pH, a reaction that leads to a substantial substitution of ε-amino groups of lysine residues and consequently a

Native allergen
is recognized and bound by specific IgE.
The native allergen does NOT reach MALT & GALT because is degraded by the salivary and gastrointestinal enzymes.
Sublingual native allergen increases allergen specific IgE acting as the favouring element for the onset of adverse events.

Monomeric Allergoid
is NOT recognized by specific IgE: the carbamylation leads to a strong decrease in the capacity to react with IgE.
Monomeric Allergoid reaches MALT & GALT in an undegraded form.
The Sublingual Monomeric Allergoid down regulates allergen specific IgE, with a progressive decrease at 6, 12 and 18 months, that acts as the favouring element for the absence of adverse events.

- **strong decrease in the capacity to react with IgE antibodies.**

Moreover, the adjuvant calcium phosphate onto which the monomeric allergoid is adsorbed, to get this new kind of depot formulation, adds the following advantages:

- **induction of allergen specific IgG response,** *(Calcium phosphate adjuvanted allergens. Ann Allergy, 1985)*
- **absence of allergen specific IgE stimulation,** *(Calcium phosphate adjuvanted allergens. Ann Immun, 1983)*
- **good tolerability and lack of local side effects.**

At each visit, they were evaluated for any local and/or systemic adverse reactions related to the administration of the carbamylated monomeric allergoid.

Results
No adverse reactions were observed in 37 out of 45 patient (82.3%). Eight patients (17.7%) showed adverse reactions. They were: mild dispnoea (1 patient), episodes of asthma (2 patients), pain at the arm (1 patient), diffuse itching (2 patients), headache (1 patient) and urticaria at the face (1 patient). None of these adverse reactions caused either the interruption of the treatment or the hospitalisation of the patient.

Conclusion
The **carbamylated monomeric allergoid**, adsorbed onto calcium phosphate and given by subcutaneous route, resulted to be well tolerated by most of the allergic treated patients.