adherent to therapy benefit most in terms of symptom control. A remarkably high number of the adherent patients (82%) treated with 5-grass-pollen tablets achieved a very good symptom control after two years of treatment.

1553
Allergen specific immunotherapy and asthma control and future risk

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Background: Allergen specific immunotherapy (SIT) beneficial effect on asthma is controversial.
Method: We enrolled in a longitudinal 5 year study 35 children aged 5–11 years old (mean age 8.2 ± 2.48), 33 children aged 12–16 years old (mean age 13.06 ± 1.23) and 56 adults (mean age 33 ± 10.5) with allergic asthma. SIT was administered SC for a period of minimum 3 years and the subjects were observed for an additional year after SIT. Asthma control was defined according to GINA criteria and treatment was reduced or increased in a step-wise manner accordingly. Lung function (LF) and exhaled NO (FeNO) were measured at SIT start and then every 3 months until the end of the observation period. Future risk was evaluated as rate of asthma exacerbations in the year before SIT compared to the year following 3 years of SIT, as unfavorable LF trend defined as persistent airway obstruction or decline compared to SIT start and as persistent high FeNO (>50 ppb) at all measurements. Statistics by *t*-test.
Results: All subjects completed the 5 year observation period. In all age groups asthma control was achieved in the majority of subjects with a decrease by >50% of asthma controller medication compared to SIT start or no medication needed and there was a significant decrease in the rate of mild, moderate and severe asthma exacerbations in all age groups (Table 1). LF improved significantly in 54.3% cases in the age group 5–11 years, in 48.5% cases in 12–16 years age group and in 39.3% cases in the adults group. Persistent high FeNO was observed in 8.6% children 5–11 years old, in none 12–16 years old and in 19.6% adults.
Conclusion: Both in children and in adults with asthma SIT has a beneficial effect on asthma control allowing to decrease or even stop controller medication. SIT is associated with a significant decrease in the exacerbation rate and with an improvement in lung function in all age groups.

1554
Comparison of three modalities of mucosal administration of carbamylated monomeric allergoid tablets to treat respiratory allergy due to house-dust mites in a real-life setting for three years

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Background: Carbamylated allergoids (monoids) are chemically modified allergens resistant to proteolytic activity of gastroenteric enzymes. Pharmacokinetics studies revealed they exert sublingual tolerogenic mechanisms and some systemic effects after swallowing. Different modalities of mucosal administration were compared to explore the contribution of sublingual and oral absorption.
Method: Adults with respiratory mite-allergy, in addition to daily cetirizine randomly received monoid (1000 UA twice/week) for 3 years with three intake modalities: sublingual/spit (SSP), oral or sublingual/swallow (SSW). A control group received cetirizine alone. Upper (UAS) and lower (LAS) airways symptoms, on-demand nasal steroids (NS) and salbutamol (B2) were registered with 6-month diary card in winter. Nasal eosinophils (EOS) were compared season by season, bronchial reactivity (MCH), lung function (FEV), and skin sensitisations at the beginning and after 3 years.
Results: Eighty patients concluded the study. A significant improvement was observed in all outcomes with all modalities in respect to controls. Notably SSW was superior to both oral and SSP in reducing UAS, LAS, NCS, EOS, and improving FEV. Oral was equivalent to SSW in reducing the use of B2; oral was also equivalent to SSP in reducing UAS, LAS, B2, FEV, MCH and superior on NCS and EOS. The MCH threshold increase determined by SPP was inferior to SSW but not to oral. Only SSW appeared protective upon the onset of new sensitisations.
Conclusion: Monoid for 3 years provides additional relief to mite-allergic patients treated with antihistamine. Both sublingual and oral absorption contribute in making sublingual/swallow the most advantageous administration modality.

1555
Effect of two different doses of monomeric carbamylated allergoid on nasal reactivity to house dust mite

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Background: Carbamylated allergoids showed benefit on allergic rhinitis over a wide range of doses, because the threshold for efficacy is easily reached through the enhanced bioavailability of the extract

Table 1. SIT and asthma control and future risk

			Children 5–11 years $n = 35$	Children 12–16 years $n = 33$	Adults $n = 56$
Asthma control	No controller medication		4 (11.4%)	8 (24.2%)	10 (17.9%)
	<50% controller compared to SIT start		21 (60%)	20 (60.6%)	25 (44.6%)
	No benefit		10 (28.6%)*	5 (15.2%)*	21 (37.5%)*
Asthma exacerbations rate/year (mean ± SD)	Mild	Pre SIT	3.11 ± 1.09	3 ± 1.11	1.98 ± 1.19
		Post SIT	1.29 ± 0.79*	0.97 ± 0.96*	0.46 ± 0.66*
	Moderate	Pre SIT	1.6 ± 1.12	1.57 ± 1.43	0.71 ± 1.12
		Post SIT	0.46 ± 0.56*	0.4 ± 0.62*	0.16 ± 1.12*
	Severe	pre SIT	0.57 ± 0.86	0.63 ± 0.81	0.15 ± 0.44
		post SIT	0.06 ± 0.23*	0*	0*

European Academy of Allergy and Clinical Immunology & World Allergy Organization
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COMPARISON OF THREE MODALITIES OF MUCOSAL ADMINISTRATION OF CARBAMYLATED MONOMERIC ALLERGOID TABLETS TO TREAT RESPIRATORY ALLERGY DUE TO HOUSE-DUST MITES IN A REAL-LIFE SETTING FOR THREE YEARS

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BACKGROUND

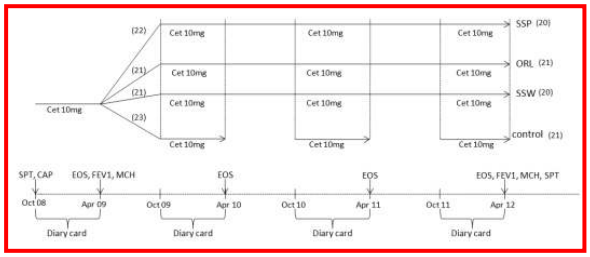
Carbamylated allergoids are chemically modified allergens resistant to proteolytic activity of gastroenteric enzymes. Pharmacokinetics studies revealed they exert sublingual tolerogenic mechanisms and some systemic effects after swallowing. These phenomena justify an increased bioavailability of these vaccine for specific immunotherapy.

This is an open parallel four group controlled study to compare different modalities of mucosal administration for exploring the contribution of sublingual and oral absorption in determining the clinical effect of allergen immunotherapy with carbamylated allergoid in tablet.

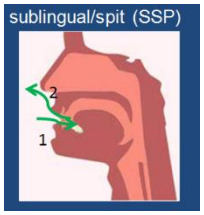
METHOD

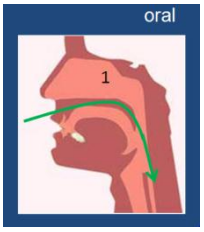
After a screening selection, 87 adults with respiratory mite-allergy, in addition to daily cetirizine randomly received monoid (tablet 1000UA twice/weekly Lais, Lofarma SpA Italy) for 3 years with 3 intake modalities and a control group received cetirizine alone:

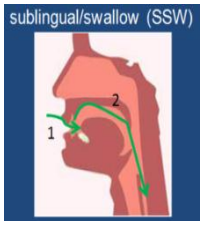
Study flow diagram



Intake modalities





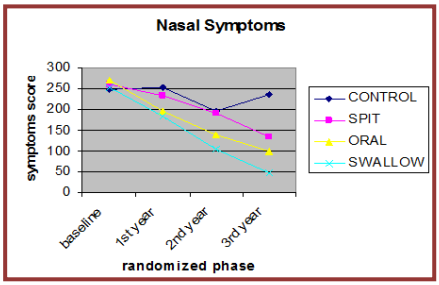


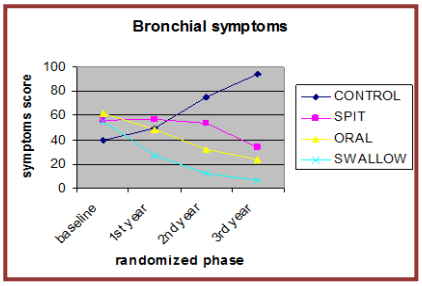
Outcomes:

- upper (UAS) and lower (LAS) airways symptoms
- on demand nasal steroids (NS) and salbutamol (B2) registered with 6-month diary card in winter
- nasal eosinophils (EOS) compared season by season
- bronchial reactivity (MCH), lung function (FEV), and skin sensitizations at the beginning and after 3 years

RESULTS

- ✓ Eighty patients concluded the study
- ✓ A significant improvement was observed in all outcomes with all modalities in respect to controls
- ✓ Notably SSW was superior to both oral and SSP in reducing UAS ($p<0.01$), LAS ($p<0.01$), NCS ($p<0.01$), EOS ($p<0.01$), and improving FEV (0.05)
- ✓ Oral was equivalent to SSW in reducing the use of B2 ($p=0.12$); oral was also equivalent to SSP in reducing UAS ($p=0.08$), LAS ($p=0.15$), B2 ($p=0.31$), FEV ($p=0.81$), MCH ($p=0.33$) and superior on NCS($p<0.01$) and EOS ($p<0.01$)
- ✓ The MCH threshold increase determined by SPP was inferior to SSW ($p<0.05$) but not to oral ($p=0.34$)
- ✓ Only SSW appeared protective upon the onset of new sensitizations ($p=0.001$)





DISCUSSION

Sublingual immunotherapy has been shown to exhibit a pro-tolerogenic effect by means of local oromucosal mechanisms (action 1).

Pharmacokinetics studies with radiolabelled extracts demonstrated that carbamylated allergoids have increased biodistribution owing to the resistance to gut enzymatic degradation, provided by the chemical modification of the allergen.

This study confirms that carbamylated allergoid provides clinical benefit also when taken orally without oromucosal stimulation, likely because of the immunological stimulation of the enteric immune system (action 2) and the adsorption of the not degradated amount (action 3).

The typical sublingual-swallow modality with carbamylated allergoid takes advantage of the combination of the three modalities of immune-system stimulation (action 1+2+3).

In conclusion monomeric carbamylated allergoid for 3 years provides additional relief to mite-allergic patients treated with antihistamine. Both sublingual and oral absorption contribute in making sublingual/swallow the most advantageous administration modality.