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# Comparing SCIT with SLIT: for Treatment of IgE Mediated Grass-Pollen Induced Rhinoconjunctivitis

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## Abstract

- The peer review literature compared the effectiveness of treating allergic rhinitis (AR) with subcutaneous immunotherapy (SCIT) versus sublingual immunotherapy (SLIT) for allergen-induced rhinoconjunctivitis.
- The findings showed that there is no clear evidence of effectiveness between SCIT and SLIT for reducing AR symptoms. SLIT has been associated with cost savings with comparison to SCIT.
- The findings indicated that SLIT may be the preferred route for immunotherapy because of its convenience, comparable efficacy, safety and cost.

## Introduction

- The purpose of this review was to determine if SLIT was more effective in treating IgE mediated grass-pollen induced rhinoconjunctivitis than traditional SCIT.
- The review of literature examined research comparing treatment outcomes of SLIT to SCIT in individuals with IgE mediated grass-pollen induced rhinoconjunctivitis.
- This information will enable one to compare treatment outcomes between the two therapies, best delivery method, safety and cost.

## Statement of Problem

- AR is a common problem affecting between 30-40% of adults and children.
- Uncontrolled AR is one of the most common reasons to visit a healthcare provider.
- In the U.S., AR is responsible for 3.5 million lost workdays and two million lost school days every year.
- If there is an effective prevention of AR there can be major socio-economic benefits.

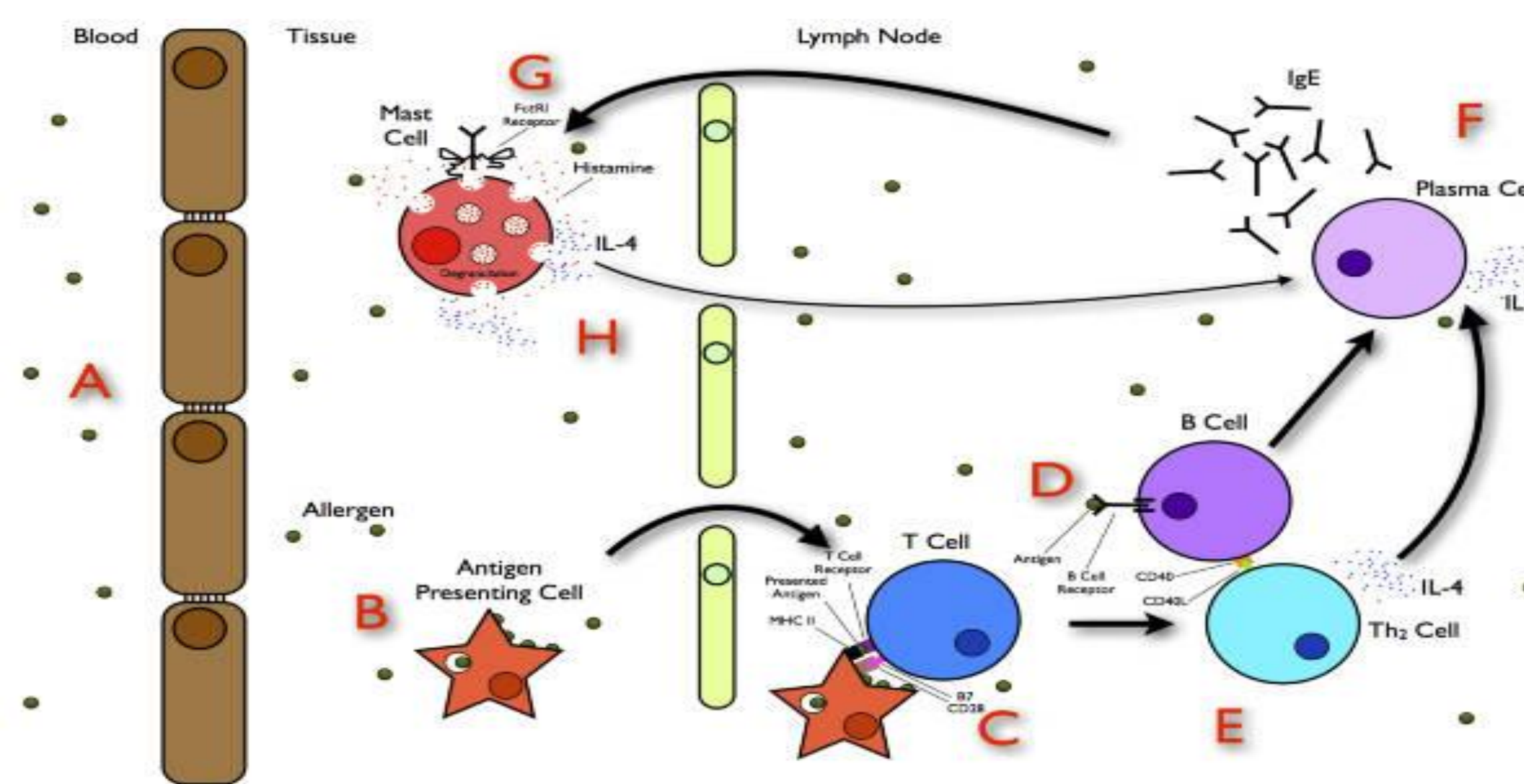
## Research Questions

- In people with IgE mediated grass-pollen induced rhinoconjunctivitis, does SLIT have better treatment outcomes than traditional SCIT?
- In people with IgE mediated grass-pollen induced rhinoconjunctivitis, what are the risks and costs associated with SCIT and SLIT?

## Literature Review

### Pathophysiology of AR and the mechanism of action of SLIT and SCIT

- AR caused by seasonal grass pollen exposure is characterized by rhinorrhea, sneezing and nasal pruritus, nasal congestion, and includes ocular symptoms such as red/burning and itchy/watery eyes.
- AR is most commonly treated with intranasal corticosteroids and oral antihistamines. For poor control in moderate to severe AR with oral antihistamines and intranasal corticosteroids, immunotherapy should be considered.
- Both SCIT and SLIT increase allergen tolerance via similar immune mechanisms, with reorientation of allergen-specific CD4+ T-cell responses from a T helper 2 (Th2) to Th1 and regulatory T-cell profiles. Allergen exposure modifies serum levels of allergen specific IgE and IgG.



### Comparison in effectiveness of SLIT to SCIT in AR

- Aasbjerg et al., examined the immunological comparison of allergen SLIT and SCIT against grass allergy over 15 months. The authors concluded 15 months of treatment was not sufficient time to completely eradicate the differences in SLIT tablet treatment and SCIT.
- A systematic review and meta-analysis was performed by Dranitsaris & Ellis, evaluating Oralair, Grazax and SCIT. There was a total of 20 placebo-controlled trial that met the inclusion criteria. It was found that Oralair reduced the symptoms of AR by approximately 0.47 units ( $p < 0.001$  on a validated symptom scale relative to placebo). For comparison, Grazax and SCIT had pooled reductions of 0.34 and 0.30, respectively.
- Dretzke et al., conducted a systematic review of effectiveness of SCIT and SLIT versus placebo. A total of 17 placebo-controlled RCTs for SCIT and 11 SLIT were utilized in the systematic review. Only one randomized, double-blinded study ( $n=71$ ) of SLIT versus SCIT was identified during the search. No study reported significant differences between SCIT and SLIT

### Cost effectiveness of SCIT and SLIT

	Cost per patient for first year of therapy	Cost per patient for years 2 and 3 of therapy
Oralair	\$1,003	\$1,983
SCIT year round	\$3,474	\$2,852
SCIT Seasonal	\$1,951	\$3,867
Grazax	\$2,171	\$4,327

### Safety of SCIT and SLIT

- Rate of one fatality per 2-2.5 million SCIT injections and one case of anaphylaxis per 33,300 injections or per 4160 treatment years (on the basis of eight injections per year). An estimated 1 billion doses of SLIT products (regardless of formulation-drops, tablets, etc.) have been taken by patients since 2000. Eleven cases of SLIT-induced anaphylaxis equate to around one case per 100 million SLIT administrations or per 526,000 treatment years.



## Discussion

- Currently the mainstay of immunotherapy for AR is SCIT. The long-term effect SCIT has on AR is well established. SLIT is a newer concept and has been developed as a more convenient form of immunotherapy.
- Dranitsaris and Ellis concluded from their systematic reviews of double-blinded placebo controlled randomized trials evaluating Oralair, Grazax and SCIT in patients with grass-induced seasonal allergic rhinitis, that the three interventions produced comparable benefits with reducing AR symptoms. There was not a study reported that showed significant differences between SCIT and SLIT in reducing symptoms of AR.
- In a study by Aasbjerg et al., the authors concluded 15 months of treatment was not sufficient time to completely eradicate the differences in SLIT tablet treatment and SCIT
- SLIT appears to be better tolerated than SCIT and majority of SLIT adverse events are local reactions and occur during the beginning of treatment and resolve within a days or weeks without any medical intervention.
- Dranitsaris and Ellis recommended the use of Oralair for immunotherapy because of its cost savings and similar efficacy against SCIT and Grazax.

## Applicability to Clinical Practice

- Allergy patients most often present to primary care as a point of first contact.
- Primary care providers (PCPs) should have the knowledge base on how to select the appropriate treatment for a patient's illness and should be trained to make a comprehensive assessment and to recognize treatment failure.
- PCPs interested in treating AR with allergen immunotherapy should be trained in detection and management of side effects, including systemic and local reactions.
- The PCP should be able to administer immunotherapy under the mentorship of a trained allergist and maintain regular liaisons with the allergist. In collaboration with the allergist, the PCP would be able to jointly decide when to discontinue the therapy.
- The decision on whether to start the patient on allergy immunotherapy should be made by an allergist.
- SLIT is viewed as more convenient for the patient because they are able to take the tablet daily at home and does not require an office visit. SCIT however, requires a weekly or monthly office visit and requires the patient to wait 30 minutes after they received their injection. As with any medication that is to be taken at home; there is a risk of non-compliance by the patient.

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