

## Editorial

# Mucosal Immunity and Sublingual Immunotherapy in Respiratory Disorders

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The prevalence of allergic diseases, specially respiratory allergic diseases such as allergic rhinitis and asthma, has been increasing worldwide for the last 2 decades [1, 2]. Although avoidance of the responsible allergen, anti-inflammatory, and symptomatic treatment modalities has shown great efficacy in the treatment of allergic respiratory disorders, cessation of pharmacotherapy usually results in recurrence of signs and symptoms, with a demand to restart the treatment.

Currently, allergen-specific immunotherapy (SIT) is the only available curative choice with the capacity of altering the natural course of allergy [3, 4]. Although SIT by the subcutaneous route has been extensively used and has shown marked efficacy since its discovery, it was associated with uncommon, but severe or even fatal, systemic reactions [5]. Consequently, alternative, noninjective allergen delivery routes have been proposed, and allergen delivery through mucosal surfaces was suggested as a possible mechanism for the induction of mucosal tolerance to allergens [5, 6]. Local mucosal routes such as oral, nasal, bronchial, and sublingual were investigated since then, and controlled trials failed to demonstrate satisfactory clinical efficacy and/or safety of oral, nasal, and bronchial allergen application; therefore those routes have been abandoned [7–11]. Meanwhile, the efficacy and safety of SIT via the sublingual route was well documented by a number of controlled trials both in children and adults with asthma and/or rhinitis [12, 13]. Since then, sublingual immunotherapy (SLIT) in the liquid drop formulation has been tested in a large number of double-blinded, placebo-controlled studies, and those studies were included in Cochrane meta-analyses [14–16] demonstrating efficacy both in children and adults with allergic rhinitis or asthma sensitized to house dust mite or various pollens. Thereafter, orodispersible grass-pollen tablets were

developed and recent well-designed, well-powered, double-blinded, placebo-controlled studies demonstrated efficacy and safety of tablet formulation [17–20].

Some of those studies improved our understanding of the underlying immunological mechanisms in addition to the proven safety and efficacy. Recent studies demonstrated that SLIT exerts its immune-suppressive effect through the induction of Treg cytokines such as IL-10 and TGF-beta [21, 22]. This effect starts on the uptake of allergen by oral mucosal Langerhans cells through high-affinity IgE receptors [6]. More recent studies demonstrated increase in expression of Foxp3+ cells in the sublingual mucosa, which was accompanied by the systemic immunologic response during SLIT [23].

Hereby in this issue, data on clinical implications, efficacy, compliance, monitorization of delivery, and immunological mechanisms of allergen SIT delivered by the mucosal-mainly sublingual route will be presented.

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