MACROPHAGE MIGRATION INHIBITORY FACTOR FROM *Trichuris Trichiura* IMPROVES SOME THERAPEUTIC PARAMETERS OF AN ALLERGY VACCINE

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Introduction: *Blomia tropicalis* is major source of mite allergens, triggering symptoms of allergic rhinitis and allergic asthma. Allergen-specific immunotherapy, while a promising therapeutic approach to induce allergen tolerance, needs improvement on aspects of safety and efficacy. Helminth-derived immunoregulatory biomolecules offer potential as allergy vaccine adjuvants. Through omics studies, our group identified the macrophage migration inhibitory factor (TtMIF) from *Trichuris trichiura* as one of this potential immunoregulatory adjuvants.
Objective: To test the recombinant TtMIF as an adjuvant for a recombinant hypoallergenic vaccine (BTH2) in a murine model of asthma induced by *B. tropicalis*.
Methods: Mice were sensitized and challenged with *B. tropicalis* extract and treated with BTH2 + Alum®, or BTH2 + Alum® + rTtMIF, in a protocol lasting a total of 4 months. After euthanizing the animals, several immunological efficacy parameters were evaluated by various in vitro assays.
Results: Presence of rTtMIF during treatment reduced allergenic markers (eosinophils, IgE, Th2 cytokines) compared to placebo, while increasing specific IgG and IgA, that may have acted as blocking antibodies, since there was inhibition of IgE-binding capacity of human sera reactive to *B. tropicalis* allergens. Compared to BTH2 alone, rTtMIF+BTH2 displayed: (i) high stimulation indexes of splenocytes; (ii) up-regulation of IL-10 and TGF-β in lungs and secreted by splenocytes; (iii) higher production of IgA in sera and lungs; and (iv) stronger induction of serological blocking antibodies. Interestingly, it was observed strong correlation between IgA and TGF-β in the mice' lungs.
Conclusions: rTtMIF acted as an adjuvant of BTH2, improving its efficacy by up-regulating regulatory cytokines and blocking antibodies. Although these results are appealing, additional chronic mice models are still warranted to confirm the findings, the exact T cell responses and rTtMIF safety without Alum®.

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