IMMUNE CHARACTERIZATION OF CHIMERIC ELASTASE WITH T-CELL EPITOPES (Q1) DERIVED FROM SCHISTOSOMA MANSONI

PAULO EMÍLIO DE OLIVEIRA CRUZ [1,2]; CAROLINA ORRICO MELO FERREIRA DE JESUS [1,2]; JOÃO VITOR BORGES RIOS [1,2]; JENNIFER EMILY ANUNCIAÇÃO SOUSA [1,2]; RAPHAEL CHAGAS SILVA [1]; CARINA SILVA PINHEIRO [1,2]; BÁRBARA CASTRO PIMENTEL FIGUEIREDO [1,2].

[1]Universidade Federal da Bahia - UFBA, Bahia, Salvador, [2]Laboratório de Alergia e Acarologia, Instituto de Ciências da Saúde- UFBA, Bahia, Salvador

Hygiene hypothesis supports the prevalence of allergies in developing countries. Such chronic immune disorders lack definitive cures, highlighting the need for effective treatments. Dust mites, such as *Blomia tropicalis*, are major aeroallergen sources, especially in Brazil. In this context, allergen-specific immunotherapy represents a viable alternative to pharmacotherapy due to its ability to modulate the immune response. Since helminth infections activate immune mechanisms similar to allergic responses, promoting Th2 polarization through immune evasion, the use of recombinant molecules from *Schistosoma mansoni,* such as cercarial elastase (SmCE) are a promising treatment option. This study evaluated the immunoregulatory and immunomodulatory effects of Q1, a chimeric protein designed with T-cell epitopes from SmCE, using *in vitro* stimulation of peripheral blood mononuclear cells (PBMCs) from allergic and non-allergic individuals sensitized to *B. tropicalis*. Q1 was designed using T-cell epitope predictions from SmCE isoforms, with peptide ligands incorporated into the sequence. For protein expression, the cDNA encoding Q1 was synthesized into plasmids, transformed into *E. coli* strains (Star and Rosetta). The protein was purified, dialyzed, and quantified. Mite extract was also prepared for comparison. Blood samples from *B. tropicalis*-sensitized individuals were analyzed for IgE reactivity via indirect ELISA. PBMCs were isolated and stimulated with Q1 for 48 and 72 hours. Cell viability and cytokine production (IL-1β, IL-4, IL-5, IFN-γ, IL-10, IL-13, TNF-α) were measured. Results demonstrate Q1 significantly increased IL-1β and reduced IL-13 in both allergic and non-allergic individuals, while other cytokines remained at basal levels. Cell viability was unaffected, indicating no adverse effects. Although more studies are needed, these results point Q1 as a viable candidate for allergen-specific immunotherapy, offering an alternative to corticosteroid-based treatments.

Supported by: CNPQ, FAPESB

Keywords: Allergy, Immunotherapy, Biotechnology