XVII INTERNATIONAL SYMPOSIUM ON
SCHISTOSOMIASIS
PERSPECTIVES ON SCHISTOSOMIASIS ELIMINATION
NOVEMBER 10-13TH 2024 | SALVADOR - BAHIA

Indicate the format in which you wish to present your work: ☐ Poster ☒ Oral Presentation

TITLE

IMMUNOREGULATORY POTENTIAL OF CHIMERIC PROTEINS FROM SCHISTOSOMA MANSONI IN MURINE MODEL FOR ALLERGY

AUTHORS

Jesus, C.O.M.F.*[1,2]; Rios, J.V.B.[1,2]; Cruz, P.E.O.[1,2]; Santos, E.J.A.[1,2]; Sousa, J.E.A.[1,2]; Silva, R.C.[1]; Fernandes, A.M.S.[1]; Silva, E.S.[1,2]; Sousa, J.E.A.[1,2]; Andrade, J.C.C.[1,2]; Belitardo, A.M.M.E.[1,2]; Melo, V.L.M.[1,2]; Vieira B.J.C.[1,2]; Santos, B.L.S.[1,2]; Sena, C.N.[1,2]; Pinheiro, C.S.[1,2]; Figueiredo, B.C.P.[1,2]

AFFILIATIONS

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

ABSTRACT

Allergies are among the most prevalent chronic diseases worldwide, with an increasing incidence in developing countries, particularly in urban areas of Latin America. Numerous studies have investigated the effectiveness of immunotherapies utilizing recombinant molecules capable of modulating allergic responses. Among the promising candidates, certain molecules derived from helminths, particularly Schistosoma mansoni, have shown potential. Infection with S. mansoni activates mechanisms similar to those involved in allergic responses, including IgE production and eosinophil recruitment, while also promoting Th1 polarization and IL-10 production, which may lead to reduced symptoms of atopy and allergic diseases. This study aims to evaluate the immunomodulatory potential of two chimeric proteins derived from S. mansoni cercarial elastase, SmCET and SmCETB, in a murine model of allergy induced by the mite Blomia tropicalis. AJ mice were divided into four groups: Negative Control (non-allergic), Positive Control (allergic without treatment), Q1 (allergic treated with SmCET), and Q2 (allergic treated with SmCETB). Allergy was induced through two intraperitoneal injections of B. tropicalis extract, followed by seven intranasal challenges with B. tropicalis lysate (BtE) over one week. Subsequently, mice were treated with PBS, dexamethasone, or one of the chimeric proteins for seven days (CEUA nº 8373280920). Post-treatment, serum levels of specific IgE, IgA, and IgG2a antibodies were analyzed, along with bronchoalveolar lavage (BAL) content. Additionally, mice splenocytes were cultured for 48 and 72 hours with BtE and either SmCET or SmCETB. Culture supernatants were assessed for cytokine production via ELISA. Splenocyte proliferation was measured using the MTT assay, and cells were labeled with CD4 and CD25 for flow cytometry analysis. Results indicated no significant differences in total BAL cell counts between treated and untreated groups; however, differential cell counts showed an increase in specific cell types in the chimeric protein-treated groups. The antibody profiles in serum and cytokine levels in the lung and BAL fluid suggest immune modulation. Notably, cytometry analysis revealed elevated lymphocyte levels in the untreated allergic group after 48 hours of exposure to SmCETB, along with altered CD4+ cell concentrations in treated groups. These findings suggest that the chimeric proteins SmCET and SmCETB could be viable alternatives for allergen-specific immunotherapy. Further studies are needed to better understand the immunoregulatory profiles of SmCET and SmCETB.

KEYWORDS

S. mansoni; Allergy; Immunotherapies; Chimeric Proteins

FINANCIAL SUPPORT

FAPESB; CNPQ; CAPES; FEPE