ALTERNATIVE APPROACHES FOR ALLERGY TREATMENT USING IgE BLOCKERS

Mesquita, D.M.C.¹; Deus-de-Oliveira, N.¹; Machado, O.L.T.¹

¹Laboratório de Bioquímica e Função de Proteínas e Peptídeos, Centro de Biociências e Biotecnologia, Universidade Estadual do Norte Fluminense Darcy Ribeiro, Rio de Janeiro, Brazil.

INTRODUCTION: Major allergens from Ricinus communis are Ric c1 and Ric c3. They present cross-reaction with allergens from wheat, soya, sesame, corn and peanuts. Six IgE binding epitopes were identified in these allergens. In these epitopes two residues of glutamic acid were important to cross-linking of allergen with IgE molecules triggering the allergy. We demonstrated that glutamic acid can also bind to IgE blocking interaction sites preventing the binding of IgE to the allergen.

OBJECTIVE: Based in this result, this study aims to evaluate the use of FREE glutamic acid and modified glutamic acid as blocking IgE agents.

METHODS: Crude extract of castor seeds was submitted to gel filtration chromatography to isolated Ric c 1 and Ric c 3. Mice were immunized with these proteins and serum was used, after quantification immunoglobulins by ELISA, as IgE source IgE. To evaluate allergic response, mast cell dgranulation assay was employed. The amino acids tested as blockers were: L - glutamic acid, D - glutamic acid, N - (4 - Nitrobenzoyl - L - glutamic acid, N - Methyl - L - glutamic acid, N - carbomil - and N - acetyl - L - glutamic acid.

RESULTS: We found that, L-Glutamic acid and N - (4 - Nitrobenzoyl-L-Glutamic acid bound to IgE, blocking totally the interaction of IgE with castor allergens. The other modified glutamic acid tested showed intermediate protection expect, D-glutamic acid which was not able to block the interaction, showing the stereospecificity of this immunoglobulin.

CONCLUSION: L-Glutamic acid and 4 - Nitrobenzoyl - L - glutamic acid are blockers of IgE, conferring properties that make them eligible for the development of a new approach for the treatment of allergy.

Key words 2S albumin, rRICINUS COMMUNIS, Allergy
Supported UENF/FAPERJ, CAPES, CNPq