

Effector and Memory Immune Responses Induced by Total Extracts of *Naegleria fowleri* Co-Administered with Cholera Toxin

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Abstract : *Naegleria fowleri* is a free-living amoeba found mainly in temperate freshwater and is the etiologic agent of primary amebic meningoencephalitis (PAM), a fatal acute disease with a mortality rate greater than 95%. At present, there are no treatments available for MAP, and the development of effective vaccines that generate long-term immunological memory allowing protection against MAP would be of great importance. The objective of this work was to analyze the effector and memory immune response in BALB/c mice immunized with total extract of *N. fowleri* co-administered with cholera toxin. In this study, BALB/c mice were immunized four times intranasally with ET of *N. fowleri* adjuvanted with CT with or without booster at three months and were challenged or not with the lethal dose of *N. fowleri*, determining survival, the humoral, effector and memory response, by ELISA and flow cytometry techniques. The results obtained showed that the survival of mice immunized with booster had 60% protection compared to the group without booster, which obtained 20% protection. Evaluating the humoral response, it was found that both IgG and IgA levels were higher in sera than in nasal washes in both treatments. In the cellular response, the increase in the percentage of positive cells was found for effector T and B lymphocytes in the nasal passages (NP) in the group with boost and nasopharynx-associated lymphoid tissue (NALT) in the group without boost and lymphocytes only. B in both treatments, as well as in memory cells treatment with boost T lymphocytes in PN and NALT and without boost in cervical lymph nodes (CG) with respect to B lymphocytes, in PN, GC and NALT in treatment with boost and NALT in treatment without booster. Therefore, the involvement of the effector immune response and memory play a fundamental role for protection against *N. fowleri* and for the development of vaccine candidates.

Keywords : immune response, immunological memory, *naegleria fowleri*, primary amebic meningoencephalitis

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