

Comparison of immunomodulatory bioactivity of three dietary fibers on cyclophosphamide (CTX)-induced immunosuppression

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Enhancing immunity is essential for the maintenance and restoration of body homeostasis, facing the pandemic of coronavirus disease 2019 (COVID-19) and unbalanced lifestyle^[1]. Previous research has proven multiple bioactivities of dietary fibers, indicating great potential in functional food development^[2,3].

The immunomodulatory activity on cyclophosphamide (CTX)-induced immunosuppression of three dietary fibers are investigated respectively from the aspects of humoral immunity. We compared the change of mice body weight, the index of spleen and thymus, IgM secretion and metabolism of serum, splenic cytokine TNF- α secretion, splenic mRNA expression of GATA-3 and T-bet detected by Quantitative Real-time PCR (RT-PCR) and CD3⁺ cells percentage in splenic lymphocyte using flow cytometry. Results show that three dietary fibers all recovered the status of immunosuppressed mice, by recovering body weight and organ relative weight, increasing the secretion of serum IgM and splenic cytokine TNF- α . Among three dietary fibers, apple pectin mostly enhanced T-bet level, regulating the balance of Th1/Th2 cells^[3]. And CD3⁺ cells percentage in splenic lymphocyte improved significantly after treated with inulin and guar gum. Our research compares the immunomodulatory bioactivity of three different dietary fibers via CTX-induced immunosuppressed mice model, providing evidence for bioactivity potential of dietary fibers and a view of integrated immunometabolic responses.

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