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Extracellular Polysaccharide Isolated from *Dunaliella salina* having Immunomodulatory and Cytotoxic Activity

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ABSTRACT: Bioactive polymers with application in various industries such as pharmaceuticals, cosmetics, biomedical and food have put the emphasis on the research on microalgae. Polysaccharides isolated from micro algae have also been proved to possess several bioactive properties. *Dunaliella salina* is a micro-alga which is known for its growth in the wide range of salt concentrations. It is found to secrete complex high molecular weight biopolymers containing various components like carbohydrates, proteins, lipids etc. In the present study, extracellular polysaccharides (EPS) were isolated from *Dunaliella salina* to assess the bioactive properties. After 20 days of culture, the EPS was extracted by ethanol extraction and checked for the presence of carbohydrates using phenol sulphuric assay. The bioactive properties of EPS were tested on peripheral blood mononuclear cell (PBMC) and mouse macrophage cell line (RAW 264.7) based on MTT assay. Phenol-sulphuric method confirmed the presence of polysaccharide in isolated EPS. It was found that EPS were able to enhance the proliferation of PBMC. In RAW cell line, stimulation was observed in the low concentration of extract whereas at high concentration, cytotoxic effect was observed. For further characterisation, the extract was tested for the presence of different compounds by thin layer chromatography (TLC) and three different peaks were observed. Hence, the present results suggest that EPS isolated from *D. salina* possess cytotoxic and immunomodulatory activities.

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