عنوان مقاله:

The Antibacterial and Immunomodulatory Effects of Carbohydrate Fractions of the Seaweed Gracilaria persica

محل انتشار:

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خلاصه مقاله:

Introduction: Red seaweeds are the source of polyanionic polymers that play a critical role in ionic, mechanical, and osmotic functions of the cells. The Gracilaria polysaccharides have numerous biological activities. This research aimed to compare the in vivo and in vitro effects of the various carbohydrate fractions of the seaweed Gracilariopsis persica. Methods: The crude polysaccharide of the G. persica seaweed was extracted using three methods, including soaking in water, hot water extraction, and acid extraction. On the optimal conditions, the seaweed polysaccharides were extracted using HCl ۰.۱ M ۱۰% (w/v), and the crude carbohydrates were precipitated by ethanol. The extract was fractionated on diethylaminoethyl cellulose (DEAE-C) column using a NaCl gradient. The antimicrobial activity of each fraction was assessed by microdilution broth method against ۶ bacteria species, including Staphylococcus aureus, Escherichia coli, Methicillin-resistant Staphylococcus aureus (MRSA), Salmonella typhimurium, Pseudomonas aeruginosa, and Aeromonas hydrophila. Moreover, the obtained fractions were orally administered (۱۰۰ µg/day) for ۷ days to ۱۰ groups of ۴ adult NMRY mice. The effects of various fractions were evaluated based on the bactericidal effect of the sera and some immune response indicators, including complement activity and humoral immune response against sheep red blood cells (SRBC). Results: Most of the fractions had direct antibacterial effects; however, oral administration of the fractions neither increased the antibacterial effect of sera nor triggered the complement activity. However, the fractions ۱, ۲, ۵, and ۶ significantly induced the humoral immune response against SRBC. Conclusion: The G. persica seaweed has direct antibacterial effects. However, unlike the humoral immune .response induction, the carbohydrate fractions have no effects on innate immune responses

کلمات کلیدی:

Gracilaria, Mice, Anti-bacterial Agents, Immunity