
Antitumor activity and immunological properties of marine algal polysaccharides, especially fucoidan, prepared from Sargassum thunbergii of Phaeophyceae.

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Marine algal polysaccharide, GIV-A from Sargassum thunbergii markedly inhibited the growth of Ehrlich ascites carcinoma at the dose of 20 mg/kg per day X10 with no sign of toxicity in mice. GIV-A is suggested to be a hexouronic acid containing L-fucan sulfate, fucoidan by the analyses of physicochemical properties and IR- and NMR-spectra. The results of carbon clearance activity with fucoidan demonstrated that it is acting as a so-called activator of the reticuloendothelial system. Fucoidan enhanced the phagocytosis and chemiluminescence of macrophages. By the immunofluorescent method, binding of the third component of complement (C3) cleavage product to macrophages and the proportion of C3 positive cells were increased. In crossed immunoelectrophoresis, human serum C3 was converted by fucoidan and appeared as the 3rd peak (converted C3). The height of the 3rd peak was directly proportional to the doses of fucoidan. The residual CH50 units of human serum decreased dose-dependently. These results suggest that the antitumor activity of fucoidan is related to the enhancement of immune responses. The present results indicate that fucoidan may open new perspectives in cancer chemotherapy.

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