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Antitumor Polysaccharide Fraction from *Sargassum thunbergii*

None dialyzable polysaccharide fraction (F-1) and dialyzable one (F-2) were isolated by separation through a Dia filter and precipitation with ethanol from *Sargassum thunbergii*. F-1 was highly effective against Ehrlich ascites carcinoma, transplanted intraperitoneally into mice, but F-2 was almost ineffective. The antitumor active substances were suggested to be acid polysaccharides.

Recently some marine algae polysaccharides obtained from the sargassum have been reported. In 1974, Yamamoto[1] reported that antitumor crude polysaccharide, obtained from *Sargassum fulvellum* by precipitation with ethanol from the aqueous extract, inhibited the growth of Sarcoma-180 implanted subcutaneously in mice. On the other hand, Nakazawa[2] also reported that sulfonic acid group-rich fraction from *Sargassum horneri* showed antitumor activity against Ehrlich ascites carcinoma in mice.

We have now obtained polysaccharide fraction from *Sargassum thunbergii* (Japanese name "Umitoranoo") which was harvested in the Nansei district of Mie Prefecture and the extract

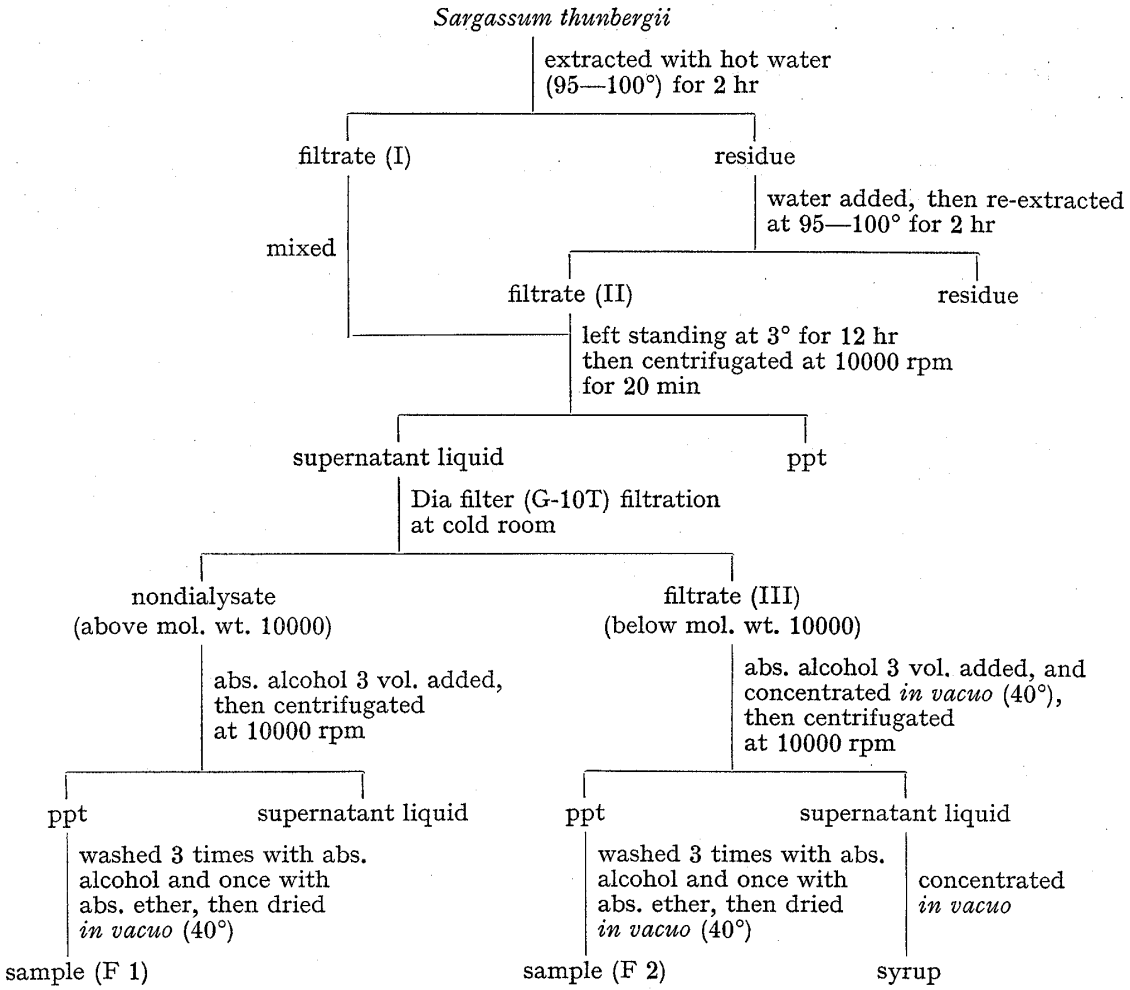

Fig. 1. Procedure for Extraction of Polysaccharide Produced by *Sargassum thunbergii*

1) I. Yamamoto, T. Nagumo, T. Takahashi, and K. Yagi, Abstracts of Papers, 33 th Annual Meeting of Japan Cancer Association, Sendai, Oct. 1974 p. 113.
2) S. Nakazawa, H. Kuroda, and T. Abe, Abstracts of Papers, 33 th Annual Meeting of Japan Cancer Association, Sendai, Oct. 1974, p. 103.

was separated into two parts, *i.e.* F-1 and F-2, through a Dia filter (G-10T) as described in Fig. 1. The antitumor activity of F-1 and F-2 was examined with DS Mie mice, inoculated intraperitoneally with Ehrlich ascites carcinoma 2×10^5 cells. As shown in Fig. 2, mice in the control group died in 14 days, while those in the group given F-1 at 10 mg/kg or 20 mg/kg, 4 out of 10 and 10 out of 10 mice survived more than 60 days, respectively. This indicate that, against Ehrlich ascites carcinoma, a large dose administration might be more effective than a small dose administration. In this experiment, the tumor-inhibiting effect of F-1 was seen during an early stage after ascites tumor inoculation. F-2 isolated the same origin was almost ineffective. When 25 mg/kg/day of F-2 was administrated intraperitoneally for 10 days, 5 out of 10 mice remained alive over 20 days and 1 out of 10 mice survived more than 60 days.

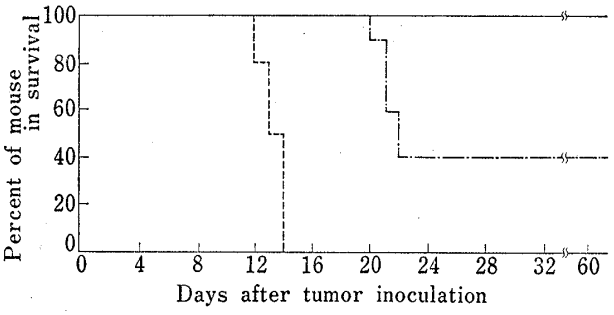

Fig. 2. Antitumor Effect of F-1 on DS Mie Mice Bearing Ehrlich Ascites Carcinoma

Treatment was initiated at 24 hr after *i.p.* inoculation with Ehrlich ascites 2×10^5 cells. Each groups was consisted of 10 mice.
--------, control; ———, treated with F-1, 20 mg/kg×10 daily; -·-·-, treated with F-1, 10 mg/kg×10 daily

The active substances were suggested to be acid polysaccharides which mainly contained galactose, glucuronic acid, xylose, fucose, glucose, mannose and slightly contained sulfonic acid group by the analysis of sugar composition. Further studies on the chemical structure and biological properties of F-1 are now in progress.

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Mie University, School of Medicine, Edobashi, Tsu, Mie-Ken, 514, Japan — Hitoshi Ito

Tokyo College of Pharmacy, Department of Pharmacy, Horinouchi 1432-1, Hachioji-shi, Tokyo, 192-03, Japan — Mamoru Sugiura

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Dethioacetalization with Thallium (III) Nitrate

Thioacetals (1—6) have been dethioacetalized by the treatment with thallium (III) nitrate under mild conditions for a short time to recover the parent carbonyl compounds in good yields. The reaction mechanisms are also discussed.

Recently, we succeeded in the conversion of α-aryl-β-nitroethylthioalkanes into α-aryl-β-nitroethoxyalkanes by means of thallium (III) trinitrate (TTN) [$Tl(NO_3)_3\cdot3H_2O$] in alcohols[1] (see Chart 1).

1) Y. Nagao, K. Kaneko, M. Ochiai, and E. Fujita, *J. C. S. Chem. Comm.*, **1976**, 202.