## Supplementary



Figure 1: The extract technological process of the polysaccharides from *S. fusiforme*. The fresh alga was dried at 50 °C and ground to powder by an electric grinder. The alga powder was defatted by 95% ethanol, and the extracts were combined and concentrated. Thereafter, isolation and purification of the hetero-polysaccharides were done by centrifugation, followed by washing with 95% ethanol. The non-dialyzable phase was dried by lyophilization, and the harvested polysaccharides were named the SFPS. The SFPS was resolved and fractionated into SP1, SP2, and SP3.