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Modification of native fucoidan from *Fucus evanescens* by recombinant fucoidanase from marine bacteria *Formosa algae*

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Highlights

- Enzymatic cleavage of native fucoidan **FeF** by fucoidanase **FFA1** yielded fractions **HMP** and **LMP**;
- **HMP** are polymeric fragments of **FeF** that have a regular structure;
- **FeF** and **HMP** have anticancer effect on colon cancer cells *in vitro*;
- Anticancer effect of **HMP** was comparable to the activity of **FeF** but not identical.

Abstract: Enzymatic depolymerization of fucoidans attracts many researchers due to the opportunity of obtaining standardized fucoidan fragments. Fucoidanase catalyzes the cleavage of fucoidan from *Fucus evanescens* (FeF) to form low molecular weight products (LMP) and a polymeric fraction (HMP) with 50.8 kDa molecular weight and more than 50% yield. NMR spectroscopy shows that the HMP fraction has regular structure and consists of a repeating fragment $[\rightarrow 3)\text{-}\alpha\text{-L-Fucp2,4OSO}_3^-(1\rightarrow 4)\text{-}\alpha\text{-L-Fucp2OSO}_3^-(1\rightarrow)]_n$. The anticancer effects of FeF fucoidan and its derivative (HMP) were studied *in vitro* on colon cancer cells HCT-116, HT-29, and DLD-1. The anticancer activity of the

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