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## Depolimerization of marine alginates improves their health benefits in human

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Marine algae is a source of active compounds with unique chemical structures, which can be used as active components in dietary supplements and functional food. Alginic acid and its salts are the basic cell wall constituents of the marine brown algae belonging to the group of substances generally termed "dietary fibers" exerting beneficial effects in human body. Alginates are large unbranched binary biopolymers. Due to their high molecular weight, alginates cannot be absorbed into the blood from the digestive tract. This dramatically reduces their beneficial potential for health. Depolymerized alginates with low molecular weight may pass through the intestinal wall and get into the bloodstream. Using an original method of the polysaccharide hydrolysis two fractions of alginates with average molecular weights 3.5 and 25.0kDa, respectively, were obtained. Intestinal absorption was expressed as a permeability coefficient (PC) indicating a share of alginate fraction that can pass through an intestinal wall. As expected alginate fraction with the molecular weight of 3.5 kDa was found to have the highest PC 12.3 indicating that about 12% of this fraction was absorbed into the bloodstream. PC of the 25.0 kDA alginate fraction as well as of the original high molecular sodium alginate was about 0.05 indicating their very low absorption capacity. Antioxidant activity of low molecular alginate fraction measured using FRAP method was 76% higher than that of the high molecular sample. Similar results were found after measurement of reducing the activity of the alginate fractions. Our study demonstrated that the low molecular alginate fraction exerts more pronounced beneficial effects than high molecular alginates.

### Biography

Maksim Khotimchenko is a head of the department of pharmacology in the School of Biomedicine, FEFU. As a pharmacologist, he explores new natural substances, which can be applied for treatment and prevention of various diseases. He has proposed the new methods for chemical modification of the natural polymer substances enhancing their health effects. He has ten patents for technological processing methods of the non-starch polysaccharides and published more than 50 papers in reputed journals.

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