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Extracellular polysaccharides of green microalga *Pseudococcomyxa simplex* (Mainx) Fott

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Keywords: extracellular polysaccharides, green microalgae, *Pseudococcomyxa simplex*, molecular weight, monosaccharide composition, glycuronic acids, protein content.

Abstract

General chemical characteristics of extracellular polysaccharides isolated from the culture liquid of the green microalga *Pseudococcomyxa simplex* are given. The studied *P. simplex* strain was isolated from the soil of coal dumps (with an acidic reaction of the environment) on the Svalbard archipelago in 2010. The *P. simplex* culture (SYKOA Ch-043-10) is kept in the collection of living strains of microalgae of the Institute of Biology of the Komi Scientific Center of the Ural Branch of the Russian Academy of Sciences (<http://ib.komisc.ru/sykoa>) on agar standard medium for green algae 3 N BBM. The growth of the culture was controlled by the number of cells. The maximum number of *P. simplex* cells after two months of cultivation reaches $26.9 \cdot 10^6$ cells/ml. At the end of the cultivation, the *P. simplex* microalga biomass was separated from the culture liquids by centrifugation. The precipitates were separated by centrifugation, dissolved in water, dialyzed against distilled water, and lyophilized. Using HPLC and GLC of *P. simplex*, molecular weights, qualitative and quantitative composition of neutral monosaccharides were determined in exopolysaccharides. The content of glycuronic acids in the fractions of extracellular polysaccharides was determined by the reaction with 3,5-dimethylphenol in the presence of concentrated sulfuric acid, the protein content was determined by the Lowry method. For the first time, the general chemical characteristics of exopolysaccharides isolated from the culture liquid of the green microalga *P. simplex* (SYKOA Ch-043-10, isolated from extreme natural conditions) are given. The molecular weight of the *P. simplex* exopolysaccharides is 586.1 kDa. The exopolysaccharides of *P. simplex* contain the galactose (4.1%) as major monosaccharide. Glycuronic acids are absent in monosaccharides, which indicates that the

exopolysaccharides of *P. simplex* belongs to the group of neutral polysaccharides. The exopolysaccharides of *P. simplex* contains a small amount (2.4%) of protein.

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