Fermentation parameters and conditions affecting levan production and its potential applications in cosmetics.

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Streszczenie

Levan is a polysaccharide composed of fructose units with β-2,6-glycoside bonds. Microorganisms synthesize levan by levansucrase as a mixture of low- and high-molecular-weight fractions. Due to its properties, it has a wide range of applications in cosmetics, pharmaceuticals, food and medicine; it appears that the molecular weight of levan might impact its industrial use. To obtain one fraction of levan after biotransformation, ethanol precipitation with an increasing volume of alcohol was conducted. This precipitation process was also optimized. Several types of analyses were used. Low-molecular-weight levan was evaluated for toxicity in a normal human dermal fibroblast cell line and hemolytic potential on human erythrocytes. Levan was found to be non-cytotoxic and non-hemolytic in concentrations ranging from 0.01 to 1.00mg/ml. Moreover, levan demonstrated antioxidant potential expressed as an ability to inhibit of oil/water emulsion oxidation and DPPH radical scavenging.

Słowa kluczowe

Biocatalysis, Bacillus subtilis, Levan, Isolation, Purification, Structural characterization, Cytotoxicity, Hemolysis, Antioxidant activity

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