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Optimization of Production and Preliminary Characterization of New Exopolysaccharides from *Gluconacetobacter hansenii* LMG1524

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ABSTRACT

The influence of different carbon and nitrogen sources, of ethanol concentration, the optimal pH, temperature and medium composition were evaluated on extracellular polysaccharides (EPS) synthesis and bacterial growth of *Gluconacetobacter hansenii* LMG1524, and preliminary characterization of EPS was investigated. The highest EPS yields were obtained using glycerol and ammonium sulphate as carbon and nitrogen sources, respectively. The increase of ethanol concentration in the medium did not influence the EPS synthesis but reduced the bacterial growth. The optimum temperature and pH for polysaccharides production were respectively 25°C and 5; whereas for cell growth were respectively 30°C and 4. The optimal culture medium composition was determined as follows: 10 g/L sucrose, 0.892 g/L (NH₄)₂SO₄, 0.34 g/L NaNO₃, 3 mL acetic acid, 1.5 g/L KH₂PO₄, 1.5 g/L K₂HPO₄ and 0.6 g/L MgSO₄. The polysaccharides produced were of 14 and 10 polymerization degrees (DP) and constituted mainly of glucose, galactose and mannose, in relative percent of 36.36, 33.94 and 22.42, respectively.

KEYWORDS

Gluconacetobacter hansenii; Extracellular Polysaccharides; Culture Conditions; Medium Composition; Orthogonal Design

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