

TITLE: ISOLATION, PRODUCTION AND CHARACTERIZATION OF EXTRACELLULAR POLYSACCHARIDES BY LACTIC ACID BACTERIA ISOLATED FROM *EUTERPE EDULIS MARTIUS*

AUTHORS: FARINAZZO, F.S.; FERNANDES, M.T.C.; MAURO, C.S.I; VALENTE, L.J.; TOMAL, A.A.B.; GARCIA, S.

INSTITUTION: UNIVERSIDADE ESTADUAL DE LONDRINA, PR (RODOVIA CELSO GARCIA CID, PR 445, KM 380, CEP 86.057-970, LONDRINA - PR, BRAZIL).

ABSTRACT:

Fruits in general, including juçara fruit - *Euterpe edulis Martius*, are important habitats for a variety of species of microorganisms in nature, like lactic acid bacteria (LAB). Many LAB synthesize extracellular polysaccharides (exopolysaccharides, EPS) with a great variation in structure and potential functional properties. In this work, EPS production by a lactic acid bacteria strain, isolated from juçara fruit, was analyzed according to its bacterial growth and EPS production and a preliminary characterization was undertaken. This isolate was identified according to the 16s rRNA sequencing, was examined in a semi-defined medium (MRS broth supplemented with 30% (w/v) sucrose and pH adjusted to 7.5) and characterized according to its functional groupings by FT-IR spectroscopy and the composition of the EPS was analyzed by high performance liquid chromatography. The EPS-producing strain JF17 isolated from juçara fruit was identified as *L. pseudomesenteroides*, and the strain was shown to produce 4.38 g/L (dry weight) of EPS when grown in a semi-defined medium. *L. pseudomesenteroides* JF17 exhibited a fast growth with a rapid decrease in pH of the medium during the first 12 h of incubation at 20 °C, and the viable cell count reached a maximum of 9.75 log CFU/mL at 24 h with pH about 4.4. EPS production by strain JF17 increased during the initial phase of growth, and continued to increase to 4.38 g/L (dry weight) until 48 h. It seemed that the EPS was not degraded until the end of 72h, although the bacterial growth decreased after 24 hours of fermentation. During EPS synthesis, sugars were used for bacterial growth during the exponential phase, and then for EPS production during the stationary phase. Thus, up until 24 h, time of greater cell viability the total sugar consumption was higher, 41%, after this period up to 48 h of fermentation, time of higher EPS yield, the sugar consumption was lower, about 35%, because the sucrose was hydrolyzed and the fructose released in the medium. The composition of the EPS after acid hydrolysis was revealed that it contained only glucose, confirming to be a homopolysaccharide and the FT-IR spectroscopy confirmed that the EPS was a dextran. Results of this study highlighted the importance of EPS production by LAB strain isolated from juçara fruit, capable of synthesizing a dextran from the hydrolysis of sugars, such as sucrose.

Keywords: juçara palm, *Leuconostoc pseudomesenteroides*, fermentation, homopolysaccharide

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