SELECTION OF EXOPOLYSACCHARIDES-PRODUCING BACTERIA ISOLATED FROM ANTARCTIC SOIL

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Exopolysaccharides (EPSs) are secondary metabolites produced by some fungi and bacteria in stationary phase of growth. They are found around the cell in capsule form. EPSs have been used on a large scale in food branch, cosmetics, biofilms and gels. The objective of this work was to select EPS-producer bacteria isolated from Antarctic soil. We tested the ability of 133 bacteria to produce easily detectable EPSs. These bacteria were isolated during a previous work from a sample of diesel-contaminated soil collected in the Brazilian Antarctic Station and maintained in a small collection of the Molecular Microbiology Laboratory of the Federal University of São João del-Rei. Bacteria were grown in Erlenmeyers containing 50mL of Nutrient Broth medium (3g beef extract, 5g meat peptone, 1L deionized water) and Erlenmeyers containing 50mL of MP medium (3.0g $NaNO_3$, 1.0g KH_2PO_4, 0.5g $MgSO_4.7H_2O$; 0.5g KCl, 1.0g yeast extract, 30,0g glucose, 1L of deionized water) during a maximum 30 days at 15°C until it was possible the visual detection of an apparent increase in density of the culture medium. The content of the flasks that showed increased density of the culture medium was centrifuged at 4000rpm during 30min. for cell removing. For the EPS extraction the supernatant was added in four parts ethanol and stored during 24 hours in refrigerator at 4°C for the EPS precipitation. After, the content was centrifuged at 4000rpm at 30min. and the supernatant was discarded. The pelletized EPS was removed and dried in frost-free freezer before being weighed. All assays were performed in triplicate. We found that 60 bacteria were able to produce EPSs. Four of them were selected for further tests due its greater EPS production: BASO60 (24.1 ± 3.8mg in MP medium), BACO40 (2.6 ± 0.7mg in NB medium), BACO02 (24.1 ± 2.8mg in MP medium) and BACO03 (12.8 ± 8.7mg in MP medium). These bacteria are being characterized for taxonomic classification and tested for determining the best conditions of medium, temperature and agitation for the maximum EPS production. In further works the produced EPSs will be characterized and their potential biotechnological utilization will be investigated.

Keywords: *bacteria*, *Antarctica*, *exopolyssacharide*

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