

Extracellular Enzymes from Halophilic Bacteria with Potential in Agricultural Secondary Flow Recovery Products

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Abstract : Various types of halophilic and halotolerant microorganisms able to be cultivated in laboratory on culture media with a wide range of sodium chloride content are isolated from several salted environments. The extracellular enzymes of these microorganisms showed the enzymatic activity in these spectrums of salinity thus being attractive for several biotechnological processes developed at high ionic strength. In present work, a number of amylase, protease, esterase, lipase, cellulase, pectinase, xylanases and inulinase were identified for more than 50th bacterial strains isolated from water samples and sapropelic mud from four saline and hypersaline lakes located in Romanian plain. On the other hand, the cellulase and pectinase activity were also detected in some halotolerant microorganisms isolated from secondary agricultural flow of grapes processing. The preliminary data revealed that from totally tested strains seven harbor proteases activity, eight amylase activity, four for esterase and another four for lipase, three for pectinase and for one strain were identified either cellulase or pectinase activity. There were no identified enzymes able to hydrolase inulin added to culture media. Several strains isolated from sapropelic mud showed multiple extracellular enzymatic activities, namely three strains harbor three activities and another seven harbor two activities. The data revealed that amylase and protease activities were frequently detected if compare with other tested enzymes. In the case of pectinase were investigated, their ability to be used for increasing resveratrol recovery from material resulted after grapes processing. In this way, the resulted material from grapes processing was treated with microbial supernatant for several times (two, four and 24 hours) and the content of resveratrol was detected by High Performance Liquid Chromatography method (HPLC). The preliminary data revealed some positive results of this treatment.

Keywords : halophilic microorganisms, enzymes, pectinase, salinity

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