STRUCTURAL ANALYSIS OF POLYHYDROXYALKANOATES SYNTHASE GENES

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ABSTRACT

POLY(HYDROXYALKANOATES) (PHAS) ARE MICROBIAL POLYESTERS THAT CAN BE USED AS COMPLETELY BIODEGRADABLE POLYMERS.BECAUSE OF THE HIGH PRODUCTION COST, THE APPLICATION OF PHA IS LI -MITED.THERE ARE MANY TYPES OF PHAS.ACCORDING TO THE CHAIN LENGTH OF CARBON ATOMS OF THE MONOMERS, THEY ARE CLASSIFIED TO THREE GROUPS: PHASCL, PHAMCL, AND PHALCL. PSEUDOMONAS RESINOVORANS HAS THE ABILITY TO PRODUCE PHAMCL COPOLYMER WHEN GROWN ON TALL -OW OR FATTY ACID. HOWEVER, THE PRODUCING STRAINS AS WELL AS THE CARBON SUBSTRATES EMPLOY -ED GIVE VARIETY TO THE FEATURES OF PHAMCL, INCREASING THEIR POTENTIALITY IN EXPLOITATION. IN THIS STUDY, THE PHA POLYMERS WERE CHARACTERIZED BY NILE RED COLONY STAINING, SOXTEC EXTRACTION, AND GAS CHROMATOGRAPHY. IT WAS SHOWED THAT C8 AND C10 WERE THE MAJOR MONOMER REPEAT-UNIT OF THE POLYMER. TO IVESTIGATE THE GENES FOR THE SYNTHESIS OF PHA IN P.RESINO -VORANS, WE CONSTRUCTED A GENOMIC LIBRARY FROM THIS STRAIN. AFTER SEVERAL TIMES OF SCREEN ING, A PHAGE CLONE WITH A 15 KB ECORI FRAGMENT WAS FOUND TO CONTAIN PHA SYNTHASE (PHAC2). THE STRUCTURES OF THE GENES WILL BE REVEALED AND THEIR FUNCTIONS, SUCH AS EXPRESSION AND SUBSTRATE SPECIFICITY, WILL BE FURTHER INVESTIGATED.

Keywords : BIODEGRADABLE POLYMERS, POLY(HYDROXYALKANOATES), PHA, PHA SYNTHASE, P. RESINOVORANS

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