NATINEE SUVANASINGHA : DEXTRANASE PRODUCED BY MARINE BACTERIA. THESIS ADVISOR : ASST. PROF.SUTHEP THANIYAVARN,Ph.D. 118 pp.

Out of 1092 bacterial strains isolated from mud and seawater , nineteen of such were found capable of producing dextranase. Among these , bacterial strain Z-10 was found to produce highest yield of dextranase. Maximum dextranase production was obtained when organisms were grown aerobically at 30 - 35 ° C (room temperature) for 48 hours in medium containing 0.5% industrial dextran (M.W. 3 - 50 x 10^6) and 3.5% casamino acid as carbon source and nitrogen source respectively while initial pH was at 9.0. Under these conditions,the maximal dextranase activity was found to be 12.8 units per ml.

Properties of dextranase from bacterial strain Z-10 were characterized , the maximal activity was observed at 55°C in 0.01 M. phosphate buffer pH 7.0 with the presence of 2.5 - 7.5% NaCl. The enzyme was quite stable over broad range of pH (5.5 - 8.0) and could withstand temperature upto 55 ° C for 30 minutes, however , such activity was completely lost at 70 ° C (within 30 minutes). Paper chromatography of products from dextran T-2000 hydrolysis were characterized as isomaltose and additional oligosaccharides. The action of this enzyme was found to be an endo-type with specificity toward α - 1,6 glycosidic linkage.

The enzyme was partially purified by ammonium sulphate fractionation , passed through sepharose 4B and finally DEAE-cellulose ion-exchange column chromatography. Via these procedures the purification was achieve by as much as 222.8 folds with a 2.28% yield. The apparent Km of dextranase for dextran T-2000 was 0.558 x 10^{-6} molar. Taxonomic studies made it possible to identify the bacterial strain Z-10 as Micrococcus sp..