ABSTRACT

Glucoamylase was produced by *Arachniotus citrinus* on wheat bran (fine particles) under solid state growth conditions.Crude extract of glucoamylase contained 16.7U/mg of proteins.

Glucoamylase was purified by ammonium sulfate precipitation ,ion- exchange chromatography and Hyderophobic interaction chromatography on FPLC system.Glucoamylase were purified to 9.4 fold with 42.96% of recovery.

Metals like (Mn^{2+},Ca^{2+} and Zn^{2+}) with a concentration of 5mM, were applied to determine their effect on irreversible thermalstability of glucoamylase.Native enzyme was completely destroyed at 62c° with half life of 16.66min.Attachment of Mn^{2+} stabilized the enzyme with half life of 31min.Ca^{2+} stabilized the enzyme more than Mn^{2+} because with Ca^{2+} enzyme showed activity at 80°C with 462 min. t_d (doubling time)

Zn^{2+} was the best metal due to its stabilizing effect.It stabilized the enzyme at 100c° with 2626 $t_{1/2}$ .Thermodynamic studies also supported Zn^{2+} stabilizing capability.ΔG^* of native enzyme at 62c° was 102.44 and ΔH^* was 245.97 kJ/mol. While ΔG^* and ΔH^* with Zn^{2+} attachment at 100c° were 130.32 and 44.39kJ/mol respectively. Higher values of ΔG^* and ΔH^* showed high stability. Low values of ΔS^* represent high stability i.e the orderness of active site.