ABSTRACT

The thermostable α-amylase is an extracellular enzyme which hydrolyze randomly 1,4-α-glycoside bonding on starch producing glucose, maltose and maltotriose units. The enzyme is widely used in bioprocess technology. In this research, the optimization and characterization of α-amylase enzyme of Bacillus sp RSSII₄B bacteria was isolated from hot spring of Lejja Soppeng South Sulawesi. Optimization of production of α-amylase enzyme by determination of concentration sago starch substrate, CaCl₂ concentration and fermentation time. Purification has been done by fractionated of enzyme from crude extract using salting out method with ammonium sulphate addition at 0-20%, 20-40%, and 40-60% saturation level. The characterization of the α-amylase enzyme was used with variations of pH, temperature, optimum substrate, pH and temperature stability. The enzyme activity is determined by the DNS method, using maltose as the standard. The protein content was determined by the Lowry method using BSA (Bovine Serum Albumin) as the standard. The results showed that the optimum condition of α-amylase enzyme production was from RSSII₄B isolate with respective substrate concentration (2,5%), CaCl₂ concentration (0,16%) and fermentation time (25 hours). The highest activity enzyme of α-amylase in saturated ammonium sulfate 20-40% fraction was specific activity of 363,02 mU/mg. The purity level is 2,2 times greater than the crude extract of the enzyme, and has the characteristic of the α-amylase enzyme was optimum pH of 6.0; optimum temperature of 55°C optimum substrate concentration of 2,5%, stable and active to 90 min at 55°C and 60°C.

Keywords: α-amylase enzyme, RSSII₄B isolate, enzyme activity