

SUMMARY

Protease enzyme from a thermophilic bacteria isolate from Plantungan Kendal hot spring have been characterized. The isolation of bacteria was done by screening methode using gelatin medium. Bacteria isolate was grown on NA medium for maintenance while, the Skim Milk Broth used in the enzyme production. The enzyme isolation was done using the extraction methode. The isolation product were then fractionated by adding ammonium sulphate with the different saturated degree i.e. F1 (0-20%), F2 (20-40%), F3 (40-60%), F4 (60-80%), followed by dialysis in phosphate buffer. The products were tested on their enzyme activity using spectrofotometer at casein weave length. The enzyme characterization was carried out by determination of the optimum pH, temperature and incubation time. The bacteria isolate found was gram negatif, rod. The results showed that the enzyme fraction 2 has the highest specific activity (2298,246 unit/mg). The optimum temperature, pH and incubation time were 40 °C, 7,5 and 15 minutes respectively.



RINGKASAN

Enzim protease dari isolat bakteri termofilik sumber air panas Plantungan Kendal telah dikarakterisasi. Isolasi bakteri dilakukan dengan metode screening menggunakan medium gelatin. Isolat bakteri ditumbuhkan pada medium NA sebagai biakan murninya. Medium Skim Milk Broth digunakan dalam produksi enzim. Isolasi enzim dilakukan dengan metode ekstraksi. Hasil isolasi difraksinasi bertingkat dengan menggunakan ammonium sulfat dengan kejenuhan 0-20% (F1), 20-40% (F2), 40-60% (F3), 60-80% (F4), dilanjutkan dialisis dalam buffer fosfat. Fraksi yang didapat diuji aktivitasnya dengan menggunakan spektrofotometer pada panjang gelombang maksimum kasein. Karakterisasi yang dilakukan meliputi penentuan temperatur, pH dan waktu inkubasi optimum. Isolat bakteri murni yang diperoleh merupakan bakteri gram negatif, memiliki bentuk batang. Dari isolasi enzim diperoleh fraksi enzim dengan aktivitas spesifik tertinggi adalah fraksi 2 (2298,246 unit/mg) dan hasil karakterisasi menunjukkan enzim bekerja optimal pada pH 7,5; temperatur 40⁰C dan waktu inkubasi 15 menit.

