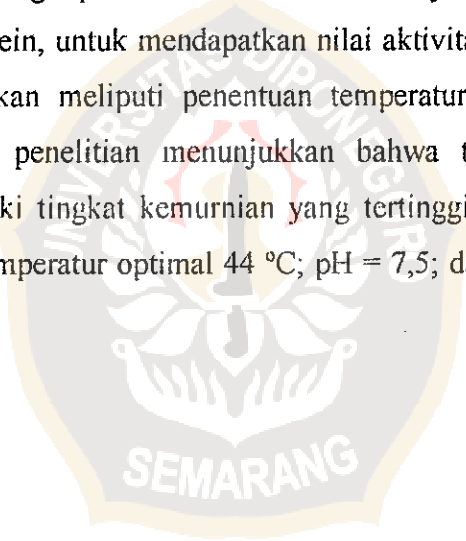


## Ringkasan

Telah diisolasi dan di karakterisasi enzim protease dari isolat bakteri termofilik sumber air panas Gonoharjo Boja. Isolasi bakteri dilakukan dengan metode goresan menggunakan medium nutrisi agar. Isolat bakteri ditumbuhkan pada medium nutrisi agar, dan enzim diproduksi pada medium skim milk broth. Isolasi enzim dilakukan dengan metode sentrifuge, dan difraksinasi bertingkat menggunakan amonium sulfat, yaitu tingkat kejenuhan 0 – 20 % ( F1 ), tingkat kejenuhan 20 – 40 % ( F2 ), tingkat kejenuhan 40 – 60 % ( F3 ), dan tingkat kejenuhan 60 – 80 % ( F4 ), dilanjutkan dialisis dalam buffer fosfat. Parameter yang diamati adalah aktivitas enzim, aktivitas spesifik, dan kadar protein. Fraksi yang diperoleh diuji dengan substrat kasein, menggunakan spektrofotometer UV-Vis pada panjang gelombang optimum kasein dan hasilnya diekstrapolasikan terhadap kurva standar kasein, untuk mendapatkan nilai aktivitas enzim protease. Karakterisasi yang dilakukan meliputi penentuan temperatur, pH, dan waktu inkubasi optimum. Hasil penelitian menunjukkan bahwa tingkat kejenuhan 20 – 40 % ( F2 ) memiliki tingkat kemurnian yang tertinggi dengan aktivitas spesifik 3,011 unit/mg. Temperatur optimal 44 °C; pH = 7,5; dan waktu inkubasi 15 menit.



## Summary

The isolation and characterization of protease from thermophilic bacteria isolate of Gonoharjo Boja hot spring have been done. The bacteria isolation has been carried out by streak method using nutrient agar medium. Bacteria isolate was grown on nutrient agar medium, and the enzyme was produced on the skim milk broth medium. The enzyme isolation has been carried out by centrifuge, and fractionating the phase has been done using the ammonium sulfate, i.e 0 – 20 % saturated degree ( F1 ), 20 – 40 % saturated degree ( F2 ), 40 – 60 % saturated degree ( F3 ), and 60 – 80 % saturated degree ( F4 ), followed by dialysis in phosphate buffer. The parameters observed were enzyme activity, specific activity, and the protein content. The fraction obtained were then analyzed using casein substrate by UV-Vis spectrophotometer in casein optimum wavelength. The results were extrapolated on the casein standard curve to obtain protease enzyme activity value. The enzyme characterization was done by determining the optimum temperature, pH, and incubation time. The results showed that F2 (20 – 40% saturated degree) give the highest purity which has specific activity of 3.011 unit/mg. The optimal temperature was 44°C; pH = 7.5; and incubation time was 15 minutes

