ABSTRACT

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DETERMINATION OF OPTIMUM CONDITION IN N-ACETYL GLUCOSAMINE PRODUCTION FROM FERMENTED PRODUCTION BY BACTERIA *Bacillus licheniformis* FROM SHRIMP SHELL WASTE (*Penaeus monodon* Fabricius*)*

Thesis, Faculty of Science dan Technology (2018)
(xii + 46 pages, 14 figures, 5 tables, and 12 appendices)

Chitinase is an enzyme that hydrolyzes chitin compounds in β-1,4-N acetylglucosamine into an N-acetylglucosamine monomer that is distributed in *Crustaceae* class animals such as shrimp. Shrimp waste is a fishery waste which increase along with the increase of shrimp exports. Chitin that are used can be produced by demineralization process by immersion of HCl 1 N (75^{o}C for 2 hours) and deproteination by immersion of NaOH 3.5% (80^{o}C for 2 hours). Protein content in shrimp can also be degraded by bacteria that have chitinase enzymes. Determination of qualitative bacteria that have enzyme activity is characterized by clear zone around colony on medium containing 0.5% of chitin colloidal. Quantitative enzyme activity was analyzed temperature, pH condition of fermentation medium, and fermentation time of bacterial grow with spektofotometry at λ 324 nm. The results showed that the highest activity of chitinase was obtained at 37^{o}C is at 4408.78 mg / L, while in the highest chitinase activity was at pH 8 and 4 days fermentation time is at 4521 mg / L.

Key word: Glucosamine, Chitin, *P. Monodon*, Fermentation, *Bacillus licheniformis*

Reference: 67 (1990-2016)

ABSTRAK

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PENENTUAN KONDISI OPTIMUM DALAM PRODUKSI N-ASETIL GLUKOSAMIN HASIL FERMENTASI BAKTERI *Bacillus licheniformis* DARI LIMBAH KULIT UDANG (*Penaeus monodon* Fabricius*)*
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Kitinase adalah enzim yang menghidrolisis senyawa kitin pada β-1,4-N-asetilglukosamin menjadi monomer N-asetilglukosamin yang terdistribusi pada hewan golongan *Crustaceae* seperti udang. Limbah udang merupakan limbah perikanan yang jumlahnya semakin meningkat seiring dengan meningkatnya ekspor udang. Kitin yang digunakan dapat dihasilkan melalui proses demineralisasi dengan perendaman HCl 1 N (75^{o}C selama 2 jam) dan deproteinasi dengan perendaman NaOH 3.5% (80^{o}C selama 2 jam). Kandungan kitin pada udang yang melimpah juga dapat terdegradasi oleh bakteri yang memiliki enzim kitinase. Penentuan bakteri secara kualitatif yang mempunyai aktivitas enzim ditandai dengan zona bening disekitar koloni pada media yang mengandung koloidal kitin 0.5%. Aktivitas enzim secara kuantitatif dianalisis suhu, kondisi pH media fermentasi, dan waktu fermentasi untuk bakteri tumbuh dengan spektofotometri pada λ 324 nm. Hasil penelitian menunjukkan bahwa aktivitas tertinggi kitinase pada suhu 37^{o}C yaitu sebesar 4408.78 mg/L, sedangkan aktivitas kitinase tertinggi pada pH 8 dan waktu fermentasi 4 hari sebesar 4521 mg/L.

Kata kunci: Glukosamin, Kitin, *P.Monodon*, Fermentasi, *Bacillus licheniformis*

Referensi: 67 (1990-2016)