

Demineralisasi dan deproteinasi kulit udang secara kontinyu pada tahapan ekstraksi kitin secara biologis = Demineralization and deproteinization of shrimp shell continuously at chitin extraction stage biologically

Deden Rosid Waltam, author

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Abstrak

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Proses ekstraksi kitin di industri dilakukan secara kimiawi, proses ini dapat memberikan dampak negatif terhadap kualitas kitin, peralatan dan lingkungan. Akhir-akhir ini penelitian ekstraksi kitin secara biologis banyak dikembangkan. Ekstraksi kitin secara biologis telah banyak diteliti, baik melalui sistem fermentasi batch atau subsequent-batch. Proses demineralisasi dan deproteinasi secara kontinyu merupakan inovasi baru dalam teknologi produksi kitin secara biologis, serta dapat mengatasi kekurangan pada sistem fermentasi batch maupun proses kimiawi.

Tujuan penelitian adalah untuk mendapatkan kondisi optimum proses demineralisasi dan deproteinasi kulit udang vannamei (*P. vannamei*) secara kontinyu, menggunakan mikroba *Lactobacillus acidophilus* FNCC 116 dan *Bacillus licheniformis* F11.1. Prosedur penelitian dibagi dalam beberapa tahapan. Tahap pertama, pada 12 jam pertama dilakukan demineralisasi secara batch, dilanjutkan demineralisasi secara kontinyu selama 36 jam. Tahap kedua, pada 24 jam pertama dilakukan deproteinasi batch, dilanjutkan deproteinasi kontinyu selama 72 jam.

Hasil percobaan menunjukkan bahwa kondisi terbaik untuk proses demineralisasi secara kontinyu, adalah umpan glukosa 6,5% dan waktu tinggal 16 jam. Untuk proses deproteinasi secara kontinyu adalah waktu tinggal 12 jam. Dengan proses ini dapat menghilangkan abu 92,95% dan protein 91,40%. Kandungan kitin, abu, dan protein pada produk kitin adalah 96,69%, 1,44% dan 1,76%.

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ABSTRACT

Chitin extraction in industry, has been conducted by chemical process. The process has been known as a harsh treatment that badly affected to chitin quality, equipment and the environment. Since the last decade biologically chitin extraction has more attracted attention. The biologically chitin extraction was conducted by batch fermentation or subsequent-batch fermentation. Continuous demineralization and deproteinization is a new innovation on biologically chitin production technology. This system promises as an alternative technology for overcoming problems of batch fermentation process and chemical process.

The objectives of the experiment was to obtain the optimal condition for continuous demineralization and deproteinization of vannamei (*P. vannamei*) shrimp shells. *Lactobacillus acidophilus* FNCC 116 and *Bacillus licheniformis* F11.1 was used for demineralization and deproteination process respectively. The experiment was divided into several steps. The first step was batch demineralization that was conducted for 12 hours, then was followed by continuous demineralization for 36 hours. The second step was batch

deproteinization for 24 hours, and was followed by continuous deproteinization for 72 hours.

The results showed that the best condition for continuous demineralization was 6,5% glucose feed, with 16 hours retention time. For continuous deproteinization, the best condition was with 12 hours retention time. The process could remove 92.95% ash and 91.40% protein. The chitin, ash, and protein content of chitin product was 96.69%, 1.44% and 1,76% respectively.