

INFLUENCE OF C/N RATIO OF THE GROWTH MEDIUM ON LIPID PRODUCTION
PROFILE OF *Zygosaccharomyces siamensis* AP 1

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ABSTRACT

Oleaginous yeast is one of the yeast strains which can be used as the source of lipid for biodiesel production because of its ability to accumulate lipid on the range of 20% - 70% of the total dry weight. The lipid accumulation process is greatly affected by the source of carbon, the source of nitrogen, C/N ratio, temperature and oxygen needs. Glucose is the essential main source of carbon (C) for lipid production process. The study aimed to observe the influence of C/N ratio of the growth medium on the production profile of lipid production of *Zygosaccharomyces siamensis* AP 1 yeast strain. *Z. siamensis* AP 1 yeast strain was cultured on NLM medium with the various of C/N ratios which were 20, 60, 100, 150 and 225, and incubated for 72 hours in the temperature of 25°C. Lipid biomass, total biomass, remaining glucose and nitrogen were measured after the fermentation process. We found that increasing the C/N ratio of the production media would increase the accumulated lipid biomass of *Z. siamensis* AP 1 yeast strain. On the other hand, the C/N ratio increase resulted in the decrease of the percentage of non-lipid biomass produced. The excessive consumption of glucose as the source of carbon was directed for the process of lipid biomass development.

Keyword: *oleaginous yeast, Zygosaccharomyces siamensis, lipid accumulation, glucose consumption*

PENGARUH RASIO C/N MEDIUM PERTUMBUHAN TERHADAP PROFIL PRODUKSI LIPID KHAMIR *Zygosaccharomyces siamensis* AP 1

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INTISARI

Oleaginous yeast merupakan khamir yang dapat dimanfaatkan sebagai sumber lipid potensial untuk produksi biodiesel karena kemampuannya untuk mengakumulasi lipid pada kisaran 20-70% dari total berat kering. Proses akumulasi lipid sangat dipengaruhi oleh sumber karbon, sumber nitrogen, C/N rasio, temperature dan kebutuhan oksigen. Glukosa menjadi sumber karbon (C) yang esensial untuk proses produksi lipid. Penelitian ini bertujuan untuk melihat pengaruh C/N rasio medium pertumbuhan terhadap profil produksi lipid khamir *Zygosaccharomyces siamensis* AP 1. Khamir *Z. siamensis* AP 1 dikulturkan pada medium NLM dengan variasi C/N rasio 20, 60, 100, 150 dan 225, diinkubasi selama 72 jam dengan suhu 25°C. Biomassa lipid dan biomassa dihitung setelah proses inkubasi, kemudian sisa medium fermentasi dihitung besaran kadar sisa glukosa dan sisa nitrogen. Berdasarkan penelitian yang dilakukan, diperoleh hasil bahwa Semakin tinggi C/N rasio menyebabkan semakin tinggi akumulasi biomassa lipid khamir *Z. siamensis* AP 1, dan penurunan presentase profil produksi biomassa non-lipid. Konsumsi berlebih glukosa sebagai sumber karbon dialihkan untuk proses pembentukan biomassa lipid.

Kata kunci: *oleaginous yeast*, *Zygosaccharomyces siamensis*, akumulasi lipid,
konsumsi glukosa



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