

Growth Kinetics of Ethidium Bromide Mutagenized *Lipomyces starkeyi* Strains

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ARTICLE INFO

ABSTRACT

Article history:

Received 17 January 2018

Received in revised form 28 February 2018

Accepted 2 May 2018

Available online 13 May 2018

Yeast growth and biomass production are greatly influenced by the length of the incubation period during cultivation. Therefore, this study was conducted to investigate the growth kinetics of five *Lipomyces starkeyi* strains as determined by biomass production. The five *L. starkeyi* strains, namely *L. starkeyi* ATCC 12659, *L. starkeyi* MV-1, *L. starkeyi* MV-4, *L. starkeyi* MV-5 and *L. starkeyi* MV-8, were inoculated in sterilized Yeast Malt broth, and, incubated for 192 hr at ambient temperature. Biomass yields were assessed and calculated gravimetrically every 24 hr. Results indicated that the optimal biomass production of *L. starkeyi* ATCC 12659, *L. starkeyi* MV-1, *L. starkeyi* MV-4, *L. starkeyi* MV-5 and *L. starkeyi* MV-8 were at 120, 168, 144, 168 and 120 hr, with the concentrations of 6.64, 6.43, 9.78, 11.23 and 8.56 g/L, respectively. These results indicate that each *L. starkeyi* strain requires specific incubation period for the optimum production of fungal biomass. Therefore, by cultivating each *L. starkeyi* strain at the predetermined incubation period, biomass yields could significantly be improved for further downstream applications such as single cell protein and lipid production.

Keywords:

Lipomyces starkeyi, random mutagenesis, oleaginous yeasts, growth kinetics, fungal biomass

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1. Introduction

Yeasts are known for their high biomass production and rapid growth rates [1]. They are capable of producing high biomass yields of between 10 to 100 g/L after 3 to 7 days of incubation period [2]. The biomass produced from these unicellular fungi is valuable because of its nutritional values, non-toxic properties and low nucleic acid content [3]. Therefore, yeasts are extensively used in various sectors of the agricultural industry as food supplements for human and animals, production of biofuels, beverages, bakery and probiotics [4-5].

Many yeasts are oleaginous. One example is *Lipomyces starkeyi*, which is reported to produce lipids up to 70% of its dry biomass under optimum cultivation conditions [6-8]. These lipids are mainly

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