



Chitosan production by submerged fermentation from *Penicillium chrysogenum* using glycerol as a carbon source.

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Introduction. The biomass from *Penicillium chrysogenum* can be an alternative source of chitosan (1). Chitosan is important raw material for the manufacture of food supplements, textile fibers, biomaterials, pharmaceutical products, among others. Given this reason, the search for alternative carbon source for fungal biomass production by submerged fermentation have an economic interest for the development of cheap processes and high quality metabolites production. Particularly the glycerol is a major waste of biodiesel industry. Low cost raw material represents an alternative for the production of fungal biomass. The purpose of this work is to evaluate the effect of the carbon source in the production of *P. chrysogenum* biomass and its chitosan composition (2).

Methods. *Penicillium chrysogenum* strain NLRR-821 and HDBB-805 was maintained on PDA agar. Before, the spore suspension of strains were inoculated into flaks with a 20 % v/v sterile semi-defined medium (3) to give a final concentration of 5×10^5 spores/mL. The flakes were then incubated at 25 +/- 2 °C in an orbital shaker at 200 rpm by 48 h, then 5 mL was transferred into flaks with 20 % v/v to defined medium with Glucose, Lactose and Glycerol as a carbon source using an initial concentration of 15, 30, and 45 g/L for each case and strain. The flakes were then incubated at 25 +/- 2 °C in an orbital shaker at 200 rpm. Each 24 h were sacrificed one series of flaks to reach 216 h of fermentation and were evaluated biomass production by gravimetric process and chitosan contained by glucosamine determination(4).

Results. The biomass yields using 45 g/L of carbon source were 10.02 and 9.68 g/L for glycerol, 7.18 and 3.31 g/L lactose and 10.79

and 8.67 g/L glucose, from the strains H-805 CDBB NRRL-823 respectively.

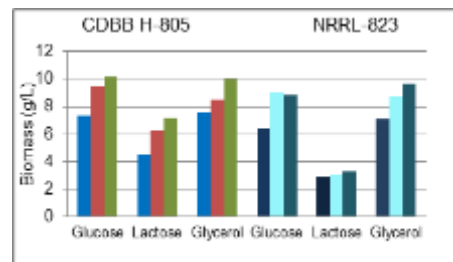


Fig. 1. Fungal biomass production. Sampling to 144 h of fermentations, carbon source concentration 15, 30 and 45 g/L the biomass production is proportional to concentration increasing.

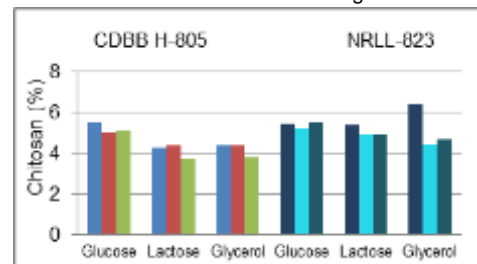


Fig. 2. Concentration and carbon source effect over the chitosan extraction from *P. chrysogenum* biomass production to 144 h of fermentation process.

Chitosan yields were 5 % using glucose as carbon source and 4.7 % with glycerol. These results were calculated in based to 100 mg of sample not in a total biomass production.

Conclusions. Glycerol is a feasible alternative to biomass production from *P. chrysogenum* to the chitosan extraction.

References.

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