

PRODUCTION OF CHITIN AND CHITOSAN FROM *Mucor circinelloides* IN DIFFERENT CULTURE MEDIA

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Chitosan is a natural, biodegradable, polycationic amino polysaccharide, essentially composed of β -1,4 D-glucosamine (GlcNAc) linked to N-acetyl-D-glucosamine residues, and is a common constituent of fungal cell walls. Chitin and chitosan hold a great economic value as due to their versatile biological activities and chemical applications, mainly in medical and pharmaceutical areas. The use of biomass from fungi has demonstrated great advantages¹. The present paper aims to investigate chitin and chitosan production by *Mucor circinelloides* (UCP 050), grown on submerge fermentation using yam bean as economic culture medium compared with traditional culture media.

Suspension of 10^8 sporangioles/mL of *M. circinelloides* were inoculated in yam bean media and four traditional media, incubated at 28°C, 150 rpm, during 96 hours. The mycelia were harvested, washed in deionized water and submitted to lyophilization process. The process of extraction of chitin and chitosan involved deproteination with sodium hydroxide solution, separation of alkali-insoluble fraction, extraction of chitosan by Acetic acid. The degree of deacetylation for chitin and chitosan were determined by infrared spectroscopy, the molecular weight was determined by viscosity.

A higher production of biomass can be verified in the yam bean medium, with average dry weight corresponding to 20.7g/L (Figure 1A). In addition, the best yield of chitin and chitosan per 1g of biomass from *M. circinelloides* (UCP 050) are

obtained using yam bean medium and Sabouraud sucrose medium for chitin 470mg/g and 331mg/g and chitosan 60mg/g and 36mg/g, respectively (Figure 1B and C). The polysaccharides showed degree of deacetylation and viscosimetric molecular weight as: 6.9% and 3.20×10^4 g/mol for chitin, and 83% and 2.72×10^4 g/mol for chitosan, respectively.

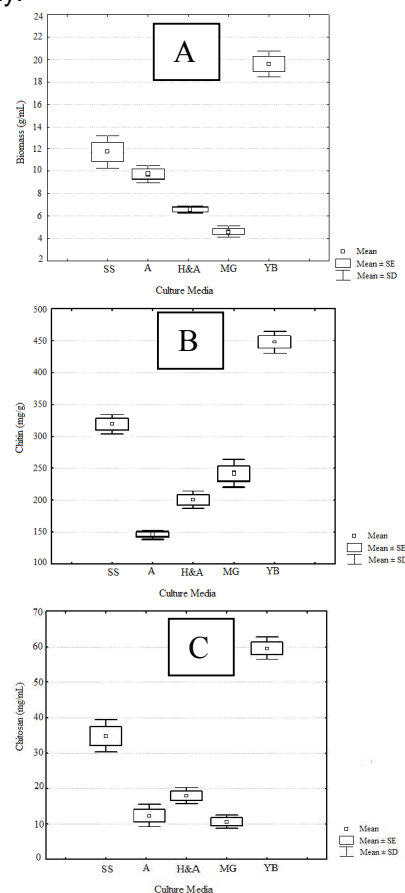


Figure 1. *Mucor circinelloides* (UCP 050) grown in different culture media, after 96 hours of time cultivation, at 28°C, 150rpm. Biomass production (A), yield of chitin (B) and chitosan (C) extracted of dry weight biomass legend: SS (Sabouraud Sucrose), A (Medium proposed by Andrade et al.), H&A (Hesseltine & Anderson medium), MG (Malte glucose) and YB (Yam Bean medium).

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