

PHYSICO-CHEMICAL CHARACTERIZATION OF CHITOSAN FROM *Absidia corymbifera*

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Chitosan is a polycationic amino polysaccharide, essentially composed of β -1,4 D-glucosamine (GlcNAc) linked to N-acetyl-D-glucosamine residues. This polymer holds great economic value due to its versatile biological activities and chemical applications [1]. Chitosan is a common constituent of fungal cell walls, particularly the class of Zygomycetes. Commercially, chitosan is obtained through the chemical deacetylation of crustacean chitin with strong alkali [2]. In order to obtain chitosan of a more consistent quality, filamentous fungi have been considered an attractive source for industrial applications because their specific products can be manufactured under standardized conditions[1,2]. This paper sets out to describe the physical-chemical properties of chitosan from *Absidia corymbifera* grown by submerge fermentation in Corn Steep medium.

Suspension of 10^8 sporangioles/mL of *A. corymbifera* were inoculated in Erlenmeyers flasks containing culture media and 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 chitosan involved deproteination with sodium hydroxide solution, separation of alkali-insoluble fraction, extraction of chitosan by Acetic acid. The degree of deacetylation for chitosan was determined by infrared spectroscopy, the molecular weights was determined by viscosity, the thermal analyses of chitosan was carried out using Differential Scanning Calorimetry (DSC) and the analysis of the reticular structure by X-ray diffraction.

In the present study chitosan from *A. corymbifera* showed degree of deacetylation and viscosimetric molecular weight up to 87% DD and 3.25×10^4 g/mol, respectively. In X-ray diffraction (Fig. 1) chitosan showed a Strong Bragg refractions at an angle $20.0-2\theta$ ($d = 4.5341 \text{ \AA}$), it can be concluded that fungi chitosan displays an organized reticular structure. The thermal analyses of chitosan from the DSC curve, showed two peaks. The first registered thermal event was a wide endothermic peak between 26 and 160°C. The second thermal event registered, related to the polymer decomposition, was an exothermic peak (Fig. 2).

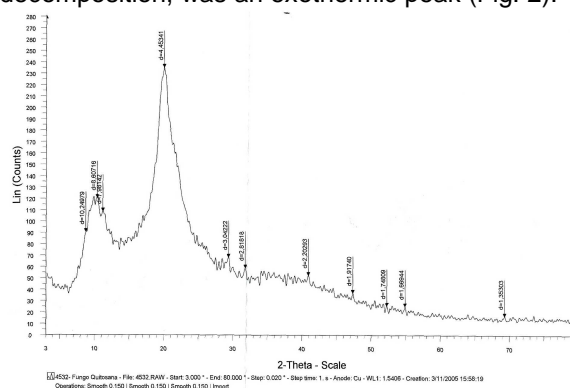


Fig. 1. X-ray diffraction of chitosan from *A. corymbifera*

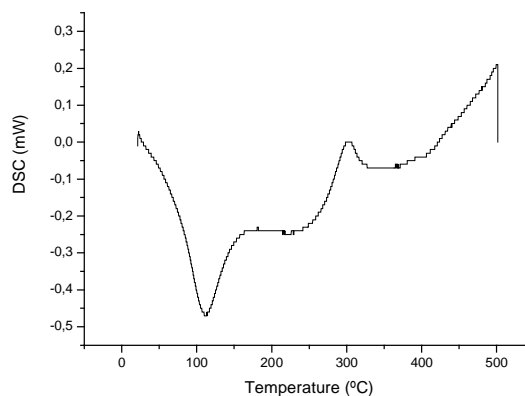


Fig.2. DSC curve of chitosan from *A. corymbifera*

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