

OBTAINING OF HYDROPHOBINS FROM SUBMERGED CULTURED *TRICHODERMA VIRIDE*

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Abstract

The search for new efficient emulsifiers for the food industry nowadays is an actual task. One of such promising emulsifiers are hydrophobins. They are low molecular structural proteins of fungi. They have very high surface activity and can be used like emulsifiers and foam stabilizer in food products. The foam-stabilizing effect caused by hydrophobins is much higher than for all known food emulsifiers. The aim of the study was to select the conditions for cultivation of the fungus to increase the yield of hydrophobin-type proteins.

The object of the study was the culture of the fungus *Trichoderma viride* selected as a producer of hydrophobin-type proteins. Submerged cultivation was performed using glucose-peptone nutrient medium with different concentrations of glucose and peptone. To study the effect of oxygen concentration on the biosynthesis of hydrophobin-type proteins, cultivation was carried out in different aeration regimes. By the end of the cultivation the native liquid was foamed and treated with 70% ethanol for extraction of hydrophobin-type proteins. Hydrophobin-type proteins from biomass were extracted with 2% sodium dodecyl sulfate (SDS) solution. The protein concentration in the extracts was determined by the Lowry method. Surface activity of the extracts were evaluated by measurement of the contact angle of their solutions.

Concentrations of glucose and peptone in the medium and aeration mode provided maximum yield of hydrophobin-type proteins were selected based on the results of the studies. Obtained extracts showed high surface activity. The foam stabilizing effect of the extracts significantly exceeds the effect of food industrial emulsifiers. The losses of the air phase in the samples stabilized with the extract amounted to about 50% in 8 weeks.

Selected conditions of cultivation ensure high yield of hydrophobin-type proteins which can be used in food industry.

Key words: *Hydrophobins, Submerge cultivation, Fungi, Emulsifiers, Surfactants, Nutrient medium.*