

Analysis of Dietary Fiber Composition in Macedonian Mushrooms

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The mushroom cell wall contains various indigestible components with important physiological properties for the health of the alimentary tract and the body as a whole defined as mushroom dietary fiber. The little available information, obtained mainly by separately applied methods on mushrooms for dietary fiber investigations intended for material of plant or animal origin, differs greatly in composition data. Based on the intention of the applied methods the investigated dietary fiber products are designated as only cellulose or only chitin. This confusion in the composition and terminology of the investigated dietary fiber from mushrooms motivated us to analyze simultaneously the chemical constitution of various dietary fiber isolates obtained from numerous mushroom samples. For that purpose, in 53 kinds of edible Macedonian mushrooms (of *Agaricus*, *Agrocybe*, *Amanita*, *Boletus*, *Calvatia*, *Cantharellus*, *Coprinus*, *Lactarius*, *Laetiporus*, *Leccinum*, *Lentinus*, *Macrolepota*, *Marasmius*, *Morchella*, *Pleurotus*, *Russula*, *Suillus*, and *Tricholoma* genera), total dietary fiber was isolated by two parallel methods intended for material of plant (Heneberg and Stochman method) and animal (Hackman's method) origin. The chemical composition of all isolated components was investigated with the aid of infrared spectrometry.

The Fourier transform infrared (FTIR) spec-

tra of the dietary fiber isolates of all the samples, obtained using two methods, were very similar. The similarity of the spectra is evident, which implies that both methods give practically the same isolate.

The RT spectra of the isolates are in agreement with the crab chitin spectra. Comparison of the spectra obtained by both methods brought us to the conclusion that in spite of their similarity, the spectra of the isolate obtained by Hackman's method have better resolved bands. Our results indicate that the dietary fiber isolates contain pure chitin. This is not in agreement with some authors, who assumed that dietary fiber isolates are mixtures of chitin and cellulose, nor with others who reported that dietary fiber in mushrooms are composed only of cellulose. Our spectra clearly show the presence of chitin in the isolate. The possibility of the isolate being a mixture of cellulose and chitin is rejected because if it is so, infrared bands connected with vibrations of NH groups are expected to have lower intensity in the spectrum compared to spectra of pure chitin, which is not the case here. Our finding for the absence of cellulose in fungin indicates the difference between mushrooms and plants. It is in accordance with the contemporary systematists, who separate mushrooms from the plant kingdom and classify them into a separate phylogenetic line called Fungi.