

FT- IR analysis of principal biochemical components in *Cantharellus cibarius*

Rodica SOBOLU¹, Luisa ANDRONIE^{1*}, Ioana POP¹, Florica MATEI¹, Iulia COROIAN¹,
Stefania ANDRONIE²

¹University of Agricultural Sciences and Veterinary Medicine, Faculty of Silviculture and Cadastre, Manastur 3-5, Cluj-Napoca, Romania, rodica.sobolu@usamvcluj.ro, *luisa.andronie@usamvcluj.ro, popioana@usamvcluj.ro, faldea@usamvcluj.ro, iuliacoroian@usamvcluj.ro

²University of Agricultural Sciences and Veterinary Medicine, Faculty of Agriculture, andraaandronie@yahoo.com

Abstract

Cantharellus cibarius are well-know mushrooms which have a high nutrition and many benefits for health. Therefore, mushrooms represent a highly interesting subject for many studies and analyses.. In recent years, consumers have shown a preference for edible mushrooms due to their nutritional value and potential medicinal properties, as they are rich in proteins, vitamins, and mineral elements.. In this study, a rapid method using Fourier transform infrared (FT-IR) spectroscopic was established for analysis and characterized a principal components for this type of mushrooms.

Introduction

Mushrooms are highly nutritious food sources, which can be cultivated on cheap and usually readily available raw materials.

Mushrooms become attractive as a functional food and as source for the development of drugs and nutraceuticals.

In the last years, there has been sustaining increase of commercial interest in mushrooms in pharmaceutical and food industries due to their wide usages as both food and medicine in many countries in this world (1).

The mushrooms have been associated to the life of human.

Mushrooms are potent source of biologically active substances which have beneficial effect on human health.

For example, most wild-grown mushrooms are rich in polysaccharides, proteins, amino acids, vitamins, and minerals, which can provide a high nutritional value for health (2).

Experimental

The sample from FT-IR spectrum was obtained from 0, 2 mg powder of mushrooms.

Fourier Transform Infrared (FT-IR) spectra were performed in the absorbance with a spectrophotometer FT-IR-4100 Jasco, using KBr pellet technique. Spectral resolution was set at 4 cm⁻¹ and all spectra were acquired over 256 scans. The spectral data were analyzed using Origin 6.0 software.

Results

Following the analysis of the spectra, we can observe an increased intensity of the characteristic absorption peaks belong to proteins (1655 cm⁻¹). The chitin is the main structural polysaccharide compounds in mushrooms and therefore, the region of 1200– 1050 cm⁻¹ mainly corresponds to the absorptions of carbohydrate. Peaks in the region of 1000-400 cm⁻¹ mainly belong to polysaccharides, such as β -D-glucan and pyranose from of glucose.

For the above reasons, the characteristic absorption peaks belong to proteins, polysaccharides and amino acids .

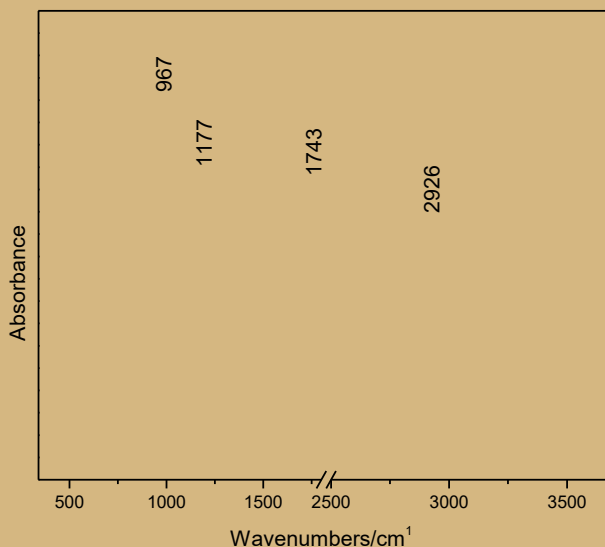


Fig.1 FT – IR spectra spectrum of mushrooms (power)



Conclusions

FT-IR spectroscopy could provide quantitative information concerning the functional groups of mushroom components.

Analyzing the spectra obtained from this types of fungi we could notice an increase in intensity of the band characteristic of proteins.

1. Sanmee, R., Dell, B., Lumyong, P., Izumori, K., Lumyong, S. (2003). Nutritive Value of Popular Wild Edible Mushrooms from Northern Thailand. *Food Chemistry*, 82, 527–532.

2. Ulzijjargal, E., Mau, J.L. (2011). Nutrient Compositions of Culinary-Medicinal Mushroom Fruiting Bodies and Mycelia. *International Journal of Medicinal Mushrooms*, 13, 343–349.