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A Comparative analysis of Lipid contents of Six Important Macrofungi of Assam

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Abstract

Macrofungi, more commonly known as mushrooms are enjoyed as food in many parts of the world. They are rich in various nutrients and have high amounts of protein , carbohydrate and lipid. In the present investigation a comparative study of lipid contents of six ethnomycologically important macrofungi, viz. *Ganoderma lucidum* (Leys ex Fr.) Karsten, *G. resinaceum* Boud. , *Pleurotus ostreatus* (Jacq.) P. Kumm , *P.tuber- regium* (Rumph. Ex Fr.), *Schizophyllum commune* Fr., *Pycnoporous sanguineus* (L.) Murrill were carried out. The present study throws light on the lipid content, which is one of the important nutritional components of the above macrofungi.

Key Words: Ethnomycological, Macrofungi, Lipid

Introduction

Macrofungi or mushrooms are rich in nutrients mainly protein, carbohydrate and lipids. More than 2,000 species of mushrooms exist in nature but only approximately 22 species are intensively cultivated for commercial purposes, on ground or wood and utilizing particular environmental and nutritional conditions (Manzi *et al*., 2001). Dietary fat, a major constituent of the normal diet and thus a tight feedback regulator, is necessary to ensure balanced lipid homeostasis. Generally, lipid content of mushroom species is low. It is reported that, in fresh mushrooms belonging to different species, the lipid proportion per 100 g is 1.75–15.5% in dried mushrooms since fresh ones contain high amount of water (Hong *et al.* 1988, Pelin *et al*., 2013). Wild edible mushrooms are becoming more and more important in our diet for their pharmacological properties (Halliwell and Gutteridge 2003). Many edible mushrooms are reported to possess antioxidant, antimicrobial and anticancerous properties (Tambekar *et al*, 2006, Aryantha *et al.*2010). According to a rough estimate, although over 2000 species of mushrooms occur worldwide, only 25 species have been widely accepted as food and a few species are successfully cultivated commercially (Lindequist *et al.* 2005). Nutritional constituents of mushrooms are dependent on several factors like mushroom species, geographical region, substrate, stage of harvest and part of mushroom (Díez and Alvarez 2001; Sanmee *et al*. 2003; Barros *et al*. 2007b; Oboh and Shodehinde 2009). Crude fat in mushrooms includes several classes of lipid compounds, free fatty acids, mono, d i, and triglycerides, sterols, sterol esters and phospholipids (Crisan and Sands, 1978).Though works on diversity of macrofungi of Western Assam has been carried out by Sarma *et al.* 2010 works on analysis of nutritional content of macrofungi has not been carried out earlier.

Materials and methods

Fruiting bodies of macrofungi were collected from different forests of Assam and were identified on the basis of macro and micro morphological features. The macrofungi were disinfected by Mercuric chloride solution.The extraction of lipid was performed using Soxhlet Method according to the method described by United States Department of Agriculture Food Safety and Inspection Service, Office of Public Health Science (2009).In this process the sample was dried in hot air oven and then was ground to fine homogeneous powder, to ensure

thorough mixing of the solvent with the sample. Petroleum ether was used as the solvent.. The extraction was done for 8 hours. At the end of the extraction the flask containing the solvent was removed and the solvent was evaporated and weight of the flask containing lipid was taken. The lipid content was measured using the following formula:

$$\text{Lipid Content (\%)} = \frac{100x(B-C)}{A}$$

Where, A= Weight of the sample, B= Weight of the flask after extraction, C= Weight of the flask prior to extraction.

Results and Discussion

The amount of lipid found in the macrofungi was calculated using Soxhlet method. The amount of lipid contained is enumerated in the table below. Their edibility and medicinal properties have been described as well. The amount of lipid content is comparatively low in macrofungi. *Pleurotus osteratus* (Jacq.) P. Kumm (4.20%) was found to have the highest lipid content while *Pycnoporous sanguineus* (L.) Murrill was found to have the lowest lipid content(1.81%) .

Table 1: Percentage of lipid content of six important macrofungi of Assam

Sl. No.	Name of the Species	Lipid content(%)	Edible	Medicinal
1	*Ganoderma lucidum*(Leys ex Fr.) Karsten	2.85	-	+
2	*G. resinaceum* Boud.	2.20	-	+
3	*Schizophyllum commune* Fr.	2.50	+	-
4	*Pleurotus ostreatus* (Jacq.) P. Kumm	4.20	+	+
5	*P. tuber-regium*(Rumph. Ex Fr.)	3.33	+	+
6	*Pycnoporous sanguineus* (L.) Murrill	1.81	-	+

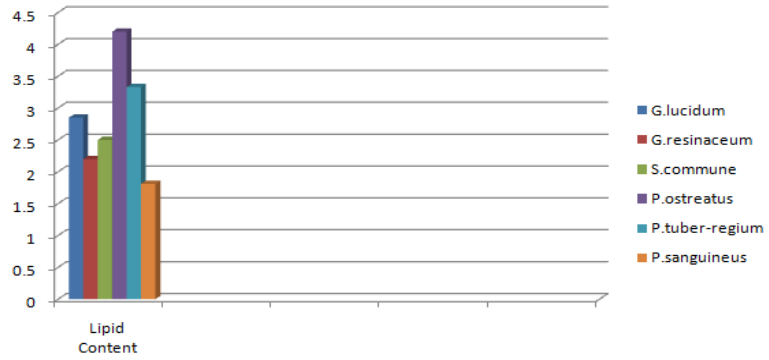

Fig 1: Comparative analysis of the lipid content of the six macrofungi studied

Conclusion

The present investigation reveals the lipid content of six ethnomycologically important macrogung viz.. *Ganoderma lucidum* (Leys ex Fr.) Karsten, *G. resinaceum* Boud. , *Pleurotus ostreatus* (Jacq.) P. Kumm , *P.tuber- regium* (Rumph. Ex Fr.), *Schizophyllum commune* Fr., *Pycnoporous sanguineus* (L.) Murrill. Some of them are used by the ethnic tribes as food, some have medicinal and therapeutic properties. The above results indicate the low lipid content of the aforesaid macrofungi. Being low in lipid content the edible ones may be considered as healthy and nutritious food option.

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