



RESEARCH ARTICLE

NUTRITIONAL STUDIES AND QUANTITATIVE ANALYSIS OF CALOCYBE INDICA, MILKY MUSHROOM

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Abstract

Nutritional and Quantitative analysis of the milky mushroom (*Calocybe indica*) were carried out. The nutritional analysis results showed the presence of Moisture, Crude fibre, ash and low content in fat value. Micro nutrients like Iron, Zinc, Copper, Selenium and Manganese were tested along with Macro nutrients like Sodium, Potassium, Calcium, Phosphorus and Magnesium were tested with mushroom dry powder. Quantitative analysis confirmed that both the mushrooms possess the presence of pharmacologically active compounds like phenols, flavonoids, saponins and tannins. Further subjection of these mushrooms for quantitative analysis showed the presence of protein 0.66 (T1), 0.61 (T2), Free amino acids, 0.44 (T1), 0.35 (T2), Total Phenols 0.55 (T1), 0.80 (T2), Tanin 0.14 (T1), 0.19 (T2). Thus, the study suggests that mushroom varieties are nutrient rich and compounds that can be explored for their medicinal properties.

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Introduction:-

Mushrooms have been widely used as food and food ingredients in many food products for a long time. Mushroom extracts and compounds have been found with special central effects that could be of pharmacological interest. From a nutritional point of view, mushrooms contain high protein and low fat. Recently, mushrooms have received much attention as sources of biological active substances i.e., secondary metabolites. In addition, phytochemicals of mushrooms were reported to function as antibacterial, antiviral, anticancer, antidiabetic, antiobese, antihypercholesterolemic, antioxidant, antiulcer, antiinflammatory, neuroprotective and hepatoprotective agent [1].

Materials And Methods:-

The *Calocybe indica* milky mushroom were obtained from Mushroom Unit, Department of Biology, Agriculture University, Coimbatore Tamilnadu, India. Sample preparation [2], nutritional analysis [3, 4] the extract was evaluated by followed the respected method.

Results And Discussion:-

Nutritive values of *Calocybe indica*:

Nutritional parameters such as moisture, crude fibre, ash, fat, and macro nutrients value were measured and the results were tabulated (Table 1).

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Table 1:- Nutritional Value of *Calocybe indica*.

Sl.no	Name of the test	Result	Remarks
1.	Moisture	6.1 %	% = gm / 100 gm
2.	Crude Fibre	9.4%	
3.	Ash	5.2%	
4.	Fat	1.5%	
MACRO NUTRIENTS			
1.	Sodium	45mg / 100 gm	
2.	Potassium	2500 mg / 100 gm	
3.	Calcium	38 mg/ 100 gm	
4.	Magnesium	102 mg / 100 gm	
5.	Phosphorus	750 mg / 100 gm	
MICRO NUTRIENTS			
1.	Iron	1.1 mg / 100 gm	
2.	Zinc	2.8 mg / 100 gm	
3.	Copper	0.75 mg / 100 gm	
4.	Selenium	Not Detected	
5.	Manganese	1.01mg / 100 gm	

Calocybe indica mushrooms are nutritionally valuable. Except selenium content, other nutritional parameters calorific value were found to be present in *C. indica*.

[6-9]

Quantitative analysis:

Based on the qualitative analysis, total phenol and flavonoids were quantified and the results were recorded (Table 2). protein 0.66 (T1), 0.61(T2), Free amino acids 0.44(T1),0.35(T2),Total Phenols 0.55 (T1),0.80(T2),Tanin 0.14 (T1), 0.19(T2)

Table 2:- Quantitative analysis of *calocybe indica*.

Phytochemicals	<i>Calocybe indica</i> (%)
Protein	T1-0.66,T2-0.61
Free amino acids	T1-0.44,T2-0.35
Total Phenols	T1-0.55,T2-0.81
Tanin	T1-0.14,T2-0.19

Presence of nutritional components and phytochemicals inferred in this study indicate the importance of *Calocybe indica* in the pharmaceutical industry.

Conclusion:-

Mushrooms were analyzed for nutritional constituents along with Micro nutrients and Macro nutrients which seemed to have the potential to act as a source of useful drugs and also to improve the health status of the consumers due to the presence of various compounds that are vital for good health. Further research should be focused to isolate the active compounds from *Calocybe indica* mushrooms to commercialize their production and marketing. Further studies on these mushrooms in pharmacological aspects are in progress.

References:-

1. Royse DJ. Forward to the Fifth International Conference on mushroom biology and mushroom products. Acta Edulis Fungi (Supplementary). 2005; 12: 1-2.
2. Suffness M, Douros J. Drugs of plant origin. In: Methods in cancer research. Academic Press, New York. 1979.
3. AOAC. Official methods of analysis. 14th Eds. Association of Official Agricultural Chemists. In: Williams, S. (Ed.). AOAC Arlington, CA. 1984.
4. Lowry OH, Rosebrough NJ, Farr AL, Randall RJ. Protein measurement with the Folin-Phenol reagent. Journal of Biological Chemistry. 1951. 193: 265-275.

5. Harborne JB. Phytochemical methods: A guide to modern techniques of plant analysis. Published by Chapman and Hall, an imprint of Thomson Sciences, London (UK). 1973.
6. Chang ST, Lau OW, Cho KY. The cultivation and nutritive value of *Pleurotus sajor-caju*.
7. European Journal of Applied Microbiology and Biotechnology. 1981. 12: 58-62.
8. Bano Z, Rajarathnam. Studies on the Cultivation of *Pleurotus* Species. MushroomJournal. 1981. 101: 243-245.
9. Manzi P, Aguzzi A, Pizzoferrato L. Nutritional value of mushrooms widely consumed in Italy. Food Chemistry. 2001. 73: 321–325.
10. Sharma SK, Lall, AM. Non-enzymatic antioxidant expression and nutritional composition of *Calocybe indica* under different organic supplementations. Journal of Cell and Tissue Research. 2013. 13(1): 3541-3544.
11. Oyenuga VA. Nigeria's foods and feedong stuffs. Ibadan University press. 1968. 1-90.
12. Lindequist U, Niedermeyer THJ, Julich W. The pharmacological potentials of mushrooms. International Journal Evidence-Based Complementary and Alternative Medicine. 2005. 2: 285-299.
13. Ncube NS, Afolayan AJ, Okoh AI. Assessment techniques of antimicrobial properties of natural compounds of plant origin: current methods and future trends. African Journal of Biotechnology. 2008. 7 (12): 1797-1806.
14. Hatano T, Edamatsu R, Mori A, Fujita Y, Yasuhara E. Effect of interaction of tannins with
15. co-existing substances VI. Effects of tannins and related polyphenols on superoxide anion radical and on DPPH radical. Chemical and Pharmaceutical Bulletin. 1989. 37: 2016–2021.
16. Kasote DM, Bhalerao BM, Jagtap SD, Khyadeb MS, Deshmukh KK. Antioxidant and α -amylase inhibitory activity of methanol extract of *Colocasia esculenta* corm. Pharmacologyonline. 2011. 2: 715-721.
17. Anwar F, Przybylski R. Effect of solvents extraction on total phenolics and antioxidant activity of extracts from flaxseed (*Linum usitatissimum* L.). ACTA Scientiarum Polonorum Technologia Alimentaria. 2012. 11(3): 293-301.
18. Alvarez-Parrilla, E, De la Rosa, LA, Martinez NR, Aguilar GA. Total phenols and antioxidant activity of commercial and wild mushrooms from Chihuahua, Mexico. Ciencia Tecnología Alimentaria. 2007. 5(5): 329-334.
19. Seema CC, Meena V. Antioxidant, antiinflammatory and antiarthritic activity of *Centella asiatica* extracts. Journal of Chemical, Biological and Physiological Science. 2011. 1(2): 260–269.