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MORPHOLOGICAL CHARACTERIZATION OF EDIBLE FLESHY FUNGI FROM DIFFERENT FOREST REGIONS

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ABSTRACT

Several edible fleshy fungi grow wild in Eastern Uttar Pradesh forest during the rainy season on dead and decaying plant or animal remains. Local tribes collect a number of mushrooms and eat during rainy season. The traditional identification knowledge among the tribes are followed from generation to generation. The bio-diversity in the mushrooms is least documented in India. The germ plasm collection of such mushrooms is very poor. These fleshy fungi are obviously nontoxic as these have been intimate human consumption since antiquity. However there are only few species of fleshy fungi which have been accepted as safe food by the civilized world, while many fleshy fungi have not yet recognized. Field survey was conducted for collection of various edible fleshy fungi from different localities of the Eastern Uttar Pradesh forest. The collected edible fleshy fungi were studied for their macroscopic detail partening the habit, habitat, morphology and other phenotypic parameter noted in fresh form.

KEY WORDS : Edible fleshy fungi, collection, identification, morphology

Wild, edible mushrooms are the special forest products. The use of wild mushrooms for food in all probability began with the prehistoric man. During the long period human as a hunter gathered the fungi of the forest that has served as important sources of nourishment. Mushrooms have been found in fossilized wood that are estimated to be 300 million years old and almost certainly, prehistoric man has used mushroom collected in the wild as food There are many edible i.e. volvarias, polypore and tubers fungi that used ethno botanical food by the tribal of forest regions of India and Nepal. These fungi are obviously non toxic as these have been in intimate human consumption by native and tribal, since antiquity (Pandey and Srivastava, 1994). These are invariably high protein rich and have been considered as potential source of proteins, amino acids, vitamins and minerals. Besides, they are valued for food and medicinal properties by people. However, the food value and acceptance of these edible fungi by the scientific and civilized world have not been recognized. These edible fungi are more important for a tropical / subtropical country like India, which has a climate, most congenial for the natural growth of such fungi. (Purkayastha and Chandra 1985).

The scope is limitless and this is high time to survey, collect, conserve, record and identifies the biodiversity in general and fungal diversity in particular as no one knows when and how some these valuable forms might be lost for forever. A systematic study of the edible fleshy fungi will explore the possibility for the scientific cultivation of the fungi in the tribal area for their nutritional security. This may be also helpful in the upliftment of the forest dwellers and tribes depending on forest produces.

MATERIALS AND METHODS

Field survey was conducted for collection of various fleshy fungi from different localities of the Gorakhpur, Vindhyachal, Chunar, and Varanasi. The collected fleshy fungi were studied for their macroscopic detail partening the habit, habitate, morphology and other phenotypic parameter noted in fresh form. Standard methods of collection, preservation, macroscopic and microscopic observations were recorded. Colour terms and notations are from Maerz and Paul 1930. parts of each collection was preserved as wet form in FAA solution in glass jars and dried specimens in the mushroom spawn laboratory Institute of Agricultural Sciences, Banaras Hindu University. Crystal of 1,4-dichlorobenzene were used to protect dried specimens against insect infestation. Some collected edible fleshy fungi were also cultured and maintained for further studied.

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RESULTS AND DISCUSSION

Collection Examined No. 1 (*Agaricus bisporus*)

Fleshy fungus was grown on dead bark of mango tree on the ground vegetation. Cap thick, conic at first then button shaped, at first still pressed against the stem, stalk hollow tough, brittle breaking with a sharp gills attached by their entire width to the stalk cap. 1-2 cm, wide hemispherical to convex, usually with a broad umbo, white when young dull brown when old, outer skin sticky, tough easily stripped of the entire cap in one piece, margin striate. Flash white, about 1-2 mm thick at the stalk, disappearing near the margin Gills 15-20 per cm at the margin, 3-4mm wide. Stalk 5-6cm long, 1-2cm thick, the base occasionally large slightly. Annulus white, thick single and some time disappearing. In dense clumps of 10-50 or more on rotten logs and dead tress of deciduous species

Collection Examined No. 2 (*Armillaria ponderosa)*

It was found in groups on the ground in deciduous or mixed tree leaved. Cap 3-4cm. wide at first spherical or 3-4cm in diameter oval shaped later the margin up raised to that the cap is broad convex to umbonate, surface shin milky white often with glassy shining, flesh 2-3cm thick. White firm, Gills 12-16 per cm at the margin 1-2mm wide, stalk 4-6cm long milky white 1-1.5cm. Thick cylindrical or tapering downward maximum weight of single fruit body was 15 gram.

Collection Examined No. 3 (*Hypomyces lactiflies*)

This Pleurotus like fleshy fungus was grown on dead part of plant decorticated wood and cellulosic materials. They are resupenate, lichenoid, dry and spongy later refused reflexed composed of a basal layer of hyphae, from which arise pillors layers. Basidiocarp was white at younger stage which changed in to brownish with the age furred fleshy texture. Stalk 6-10cm long, 4-10mm thick average weight of single fruit body was 20 gram and 250 gram in bunches.

Collection Examined No. 4 (*Ganoderma sp.*)

Basidiocarps emerged on stumps, logs and living hardwood, cap slightly convex to flat creamy white margin, yellowish ring made in middle and orange in center and sticky, stem present with totally jointed cap. cap. 2-4 cm, wide hemispherical to convex, stalk 2-3cm short dark orange 1-2cm. thick average weight of single fruit body was 20 gram.

Collection Examined No. 5 (*Ganoderma sp.*)

Fruit body was emerged on stumps, logs and living hardwood, cap slightly convex to flat reddish margin, orange and dark reddish in center with roughness, stem present with one side jointed cap. stalk 2-3cm short reddish 1-2cm. thick cap. 4-8 cm, wide hemispherical to convex and average weight of single fruit body was 70 gram.

The present investigations are agrees well with the description given some researchers like Atri and Kaur (2005**)** who has collected from different localities of north eastern Punjab three mushrooms belonging to family Pluteaceae **(***Pluteus umbrosus*, *Volvariella cubensis* and *V. surrecta* . They have illustrated and described for first time from India. Pradeep and Vrinda (2005) have also collected and studies using taxonomic descriptors of four species of Pluteus from western Ghat of Kerela, India. Upadhyay and kaur (2003) have recorded and described five species of Agaricus viz; *Agrocybe putaminum*, *Entoloma coneri*, *Phaeocollybia latispora*, *Melanoleuca tristis* and *Collybia butyracea* for the first time from India.

Collection No. 1

Collection No. 2

Collection No. 3

Collection No. 4

Collection No. 5

Morphological characterization of edible fleshy fungi from different forest regions

Particular	Collection No- 1	Collection No- 2	Collection No- 3	Collection No- 4	Collection No- 5
Locality	Chunar Mirzapur	Sonebhadra	B.H.U Campus	Chandauli	Adalpura Mirzapur
State	U.P.	U.P.	U.P.	U.P.	U.P.
Habitat	On bark wood of mango tree	On humus	On wood	On wood	On wood
Type of soil	-	Clay loom	Clay loom	Loom	Loom
Forest type	Mixed	Leaved	Mixed	Leaved	Leaved
Size of the fructification	5-6x6-8 cm	5-7 x 4-6cm.	8-11x7-15cm.	2-4x3-4 cm	2-4x4-10 cm
Carpophore shape	Thick button shaped	umbrella shape	oyster shape	Thick, Hard oval	Thick, Hard heart
Umbo	Present/convex well shaped	Present/convex well shaped	Present/oyster shaped	Absent	Absent
Scale	White	White	Brown	Absent	Absent
The Gills	Present	Present	Present	Absent	Absent
Colour (Young)	Furry white	White	Brown	Absent	Absent
Colour (Mature)	Milky white	White	Creamy	Absent	Absent
Gills edges	Smooth	Smooth	Smooth	Absent	Absent
Stipes	Present	Present	Present	Present	Present
Length	5-6 cm	4-6cm.	6-10cm.	2-3cm	2-3cm
Width	1-2 cm	1-1.5cm.	5-10mm.	1-2cm.	1-2cm.
Color	White	White	Dirty to brown	Dark orange	Reddish
Shape	Clubbed	Clubbed	Slender, tapering to down ward	Thick and Broad	Thick and Broad
Type of vail	Absent	Absent	Absent	Absent	Absent
Annuls (Position)	Single	Single	Absent	Absent	Absent
Volva	Absent	Absent	Absent	Absent	Absent
Similarities with	*Agaricus bisporus.*	*Armillaria ponderosa*	*Hypomyces lactiflies*	*Ganoderma sp.*	*Ganoderma sp.*

REFERENCES

Atri N. S. and Kaur H.; 2005. Some unrecorded wild mushroom of Punjab, India**.** Mushroom Research, **14 (2)**; 56-59.

Maerz A and Paul M R.; 1930. A dictionary of colour. MC Graw Hill Book Company Inc. London: 207.

Pandey V.N. and Srivastava A.K.;1994. Fleshy fungi of ethno botanical food use in North Eastern Tarai region of Uttar Pradesh. Proc. National Symposium on Mushroom, NRCM-Solan: 3.

Pradeep C. K. and Vrinda K. B.; 2005. New addition to the genus Pluteus fron India. Mushroom Research, **14 (2)** : 46-49.

Purkayastha R.P. and Candra A.; 1985 Manual of Indian Edible Mushroom. Today and Tomorrow Printer and Publisher, New Delhi: 266.

Upadhyay R. C. and Kaur A.; 2003 New addition to the indian fleshy fungi from North Western Himalaya. Mushroom Research, **12 (1)**: 9-14.