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Hitherto Unreported Lentinus species of Tribal Area of Visakhapatnam

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ABSTRACT: The present study documents six species of **Lentinus species** distributed in the forests, plantations and grass lands of the Eastern ghats of Visakhapatnam distrct, A.P., India. Occurrence and distribution of **Lentinus species** have been assessed based on literature and the present survey. Descriptions recorded **Lentinus species** are given along with diagnastic features for identification. Traditional knowledge of **Lentinus** has been documented based on a tribal sect and the local population. As **Lentinus** are uncultivable, strategies recommended for conservationof their habitat and sustainable harvesting of this human nutritional source as an alternative to plant and animal- derived food.
Key Words: Mushrooms, **Lentinus species**, Tribal sect, knowledge.

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I. INTRODUCTION:

Mushrooms comprise largely the group of fleshy fungi, which include bracket fungi, fairy clubs, toadstools, puffballs, stinkhorns, earthstars, bird's nest fungi and jelly fungi. The rich regions biodiversity is an indicator of healthy habitat and its potential to sustain life during rainy season.

India is one of mega biodiversity center and has ample wild edible and medicinal mushrooms are present. Wild edible mushrooms (WEMs) are important contributions to rural and tribal livelihoods. For many years varous macrofungal species have been used worldwde in preparing dishes with high protein and mineral content. Despite this, WEMs are seldom included in valuation. The tribal area of Visakhapatnam region is rich in plant biodiversity and the climatic conditionstogethermade the natural habitat conducive for the occurrence of large number of mushrooms.

Genus **Lentinus** belongs to the family **Polyporaceae** and order **Polyporales**. Forty species of this genus has been reported world wide (Kirk, 2001). The genus **Lentinus** Fr. is characterized by the presence of dimitic and amphimitic hyphal systems (Moser,1978; Kuhner, 1980; Pegler,1983; Siner, 1986) with the fascicles of sterile hyphae coming out from the hymenium surface (hyphal pegs). Many of its species are edible except those with tough and leathery.The genus **Lentinus** includes the wood decaying species characteried by decurrent lamellae, homiomerous context, dimitic sporocarp tissues and hyaline elliptical spores. Most of the **Lentinus** species are edible and used by the people because of the presence of significant amount of proteins, lipids, fats, minerals in them from dietary point of view as reported by chang and miles.

The tribal area of Visakhapatnam is unique due to its varying biogeographical and physicochemical environment. This region has intermingling forests of highly valuable and endangered medicinal plants, as well as a variety of edible and medicinal mushrooms few of which are consumed by local tribes. The area is rich in Forest Produces. The important timber products are Teak, Maddi, Guggilam, Kamba and Vegisa. Bamboo which is found abundance in the Forest area.Tamarind, Ginger, Turmeric, Pippalimodi, Gantubarangi, Ranwalbia, Serpentime, Myrobalam, Adda-Leaf and Honey are the other significant items of Forest Produce collected in the AgencytractsoftheDistrict.The tribals are having their own culture and customs. Agriculture is the main occupation of the Tribals. They cultivate both wet and dry crops. Their income is supplemented by collection and sale of Minor Forest Produce.

This region remained unexplored and the wild edible mushroom treasure of the region yet unnoticed by eminent mycologists of the visakhapatnam area. The aim of the present study was to explore the region for the existence of the valuble and neutraceutically important wild mushrooms and their conservation.

II. MATERIALS AND METHODS:

Study Area:

Visakhapatnam district with an area of 11,161 Km (4.1% of the area of the state) is one of the north eastern coastal districts of Andhra Pradesh. The study area lies between 17º - 34' 11" and 18º - 32' 57" northern latitude and 18º-51' 49" and 83º-16' 9" in eastern longitude. It is bounded on the north partly by Orissa state and partly by Vizianagaram district, on south by East Godavari district, on west by Orissa state and east by Bay of Bengal with 43 mandals, of which 11 (Chintapalli, Koyyuru, G.K.Veedhi, G.Madugula, Paderu, Pedabayalu, Munching put, Hukumpeta, Dumbriguda, Araku valley and Ananthagiri) are situated in the hilly areas known as the agency area.

The District consists of two natural divisions viz., the Agency and Plain areas. The Agency mainly consists of hilly regions covered by Eastern Ghats which run parallel into coast and stretches over a length of about 161 KMs.

The average height of the hills in the district ranges from 3000 to 3500 feet from the sea level. The highest peak in the District is "Sankaram" which is about 5300 feet in height. The climate in the Hill Region is cool on account of elevation and of the green vegetation. The monsoon sets early and is along drawn in the Agency area apart from recording on average rainfall of 8412.30 MM, as against 80 MM for the District. The winter is also severe in the Agency area with the minimum temperature touching as low as 0 to 2^0Csometimes. Half of the District area is covered by forests and a considerable portion of reserve Forest.

Sample Collections:

Six species of wild **Lentinus**mushrooms were collected from different localities in tribal region of Ester Ghats of South India during 2015-2017. Repeated visits and periodical surveys of the localities revealed a plethora of wild mushrooms out of which the genus **Lentinus** seemed to spring out in all the localities throughout the monsoons (June to September). Mushrooms were collected from the non reserved region of the forest like roadsides, landscapes, grasslands, pastures. The collected specimens were brought to the lab, cleaned and microscopical examinations of the hymenium, basidiospores and cuticle were performed. Taxonomic identifications were made based on their morphological, microscopic and staining studies according to the methods given by Wasser, 2007.

III. RESULTS AND DISCUSSION:

The results of the present study show that some of the mushrooms act as mycorrhizal fungi because of the close dependency on associated tree species. It is interesting to note that richness and abundance of the mushrooms was much higher in the thick forest.The study revealed the occurrence of six species of **Lentinus species** found in tribal area of Visakhapatnam was recorded.Details of each species, includinghabitat, percent occurrence and vernacularnames, are given. The six Lentinusspecies were Lentinussquarrosulus,Lentinuspolychrous,Lentinus fasciatus, LentinusstupeusandLentinussajor-caju.

Lentinusroseus:

L.rosensgrows on decaying wood, mostly as clusters. They present in lowland,hill and forestregion. It is first found in Eastern Ghats.When fully grown, the sporocarp of was light brown, white, typically funnel shaped, measures up to 6 cm in diameter and 2cm high.The stipe is solid,fusiform, attached to a discoid base.This new species forms clusters of basidiomes on dead and decaying wood. Initially, the young sporocarps are Light brown andWhite theybecome Brownwith maturity.An excellent edible mushroom because of itsattractive appearance and excellent taste, middle of the rainy season during period of June and July are the best time for this species.

Lentinussquarrosulus:-

L.squarrosulusis found on old stumps andfallen trunksas clusters in the forests usually appearthe middle of the rainy season the month of June and July are the best time for this species was observed.It is one of the most common macro-fungi of the area, growing in clusters, usually consisting of three to six basidiomes but occasionally a tuft of up to thirty basidiomes may be found. When fully grown, the sporocarp of **L.squarrosulus** reaches up to 2-7 cm diameter and the surface is milk-white or pinkish.A good edible species.

Lentinuspolychrous:-

Clusters are found on old stumps andfallen trunks in the forests. The caespitosehabitatoften in distorted basidiomes with eccentric or lateral stipes. The gilled sporocarps of the white rot fungus aretypically peltate(umbrella-shaped), semi-peltate(funnel-shaped) or even auriculate (ear-shaped), with one side curved like a ram's horn. Quite commonly bleached or dyed for potpourri, the native colour upon drying is beige with darker gills.When fully grown, the sporocarp of **L. polychrous**reaches up to 5-16 cm diameter and the surface is a paleochraceous cream colour, chamois brown to fuscous brown and more greyish brown towards the margin.

Lentinusfasciatus:-

Grows on fallen branches and logs, in groupswhen fully grown, the sporocarp of **L.fasciatus** is pale brown to purplish pale brown, typicallydepressed or funnel-shaped and measures up to 2-7cm in diameter with numerous hispid and downy hairs becoming longer towards the margin on the cap surface.Edible when the sporocarps are young.This species usually appears inthe middle of the rainy season. June and July are the best time for thisspecies.

Lentinusstupeus:-

Single to scattered on decaying deciduous trees. When fully grown, the sporocarp of **L. stupeus** isdark purplish brown to black brown, typicallyconvex and depressed at the centre. It has denselycurved hispid hair and the margin is strongly curved and up to 3-7 cm in diameter. The slightly decurrent gills have a tooth-like edge. The solid stipe is cylindrical, with yellowish brown, cinnamon brown scales. The flesh is tough andwhite to pale brown. Edible when the sporocarps are young.This species usually appears inthe middle of the rainy season; June and July are the best time for thisspecies.

Lentinussajor-caju:-

This species normally appears inthe middle of the rainy season.Found in clusters on old stumps and fallen trunks in the forests area. The caespitose habitat often results in distorted basidiomes with excentric or lateral stipes. It is normally a saprobe butaccording to **Bilgrami(1991)**,causes a white rot ofboth the sap wood and heart wood of many trees, including the economically important crops.

According to **Kroper and Albee (1996)** and **Buee et al., (2005)** fruit body production of some fungi adversely affected disturbed forest due to thinning of trees. However, according to **Shaw et al., 2003** some mushrooms increase their fruit body production, when thinning is increased. According to **Arholds (1998)**, most healthy forest ecosystem housed more than 45% ecto mycorrhizal fungi.

IV. CONCLUSION:

The diversity and distribution of **Polyporales**in less diverse than previously reported, but six species identified were not yet recorded. In conclusion, there is need of further continuous and long-term research to be undertaken for a better knowledge and understanding of Visakhapatnam macro fungal diversity in particular.

REFERENCES:

[1]. Arnolds E 1988. The changing macromycetes flora in the Netherlands. Trans. Brit. Mycol. Soc. 90:391-406.

[2]. Bilgrami K.S., Jamaluddin S., Rizwi M.A. (1991): Fungi of India: List and References. – 798 p. NewDelhi.

[3]. Buee M, Maurice JP, Marcais B, Dupouey JL, Garbaye J, Le Tacon F 2005. Effect des intervention Sylvicoles sur les champignons sylvestres. Forest-Enterprise. 164:26-32.

[4]. Kirk, P.M., Cannon, P.F., David, J.C. &Stalpers, J.A. (eds.). 2008. Ainsworth &Bisby's Dictionary of the Fungi (10th ed.). Wallingford, United Kingdom: CABI Publishing.

[5]. Kirk, P.M., P.F.Cannon,P.F. Minter and J.A.Stalpers, 2008. Ainsworth Bisby's Dictionary of Fungi (10^{th} ed.) CAB International Wallingford, Oxon, OX10, 8DE ., Uk.

[6]. Kroper BR, Albee S 1996. The effects of silviculture treatments on occurance of mycorrhizal sporocarps in a Pinuscontortaforest: A preliminary study. Biol. Conserv. 78:313-318.

[7]. Kuhner.R, 1980 – Les Hymenomycetes agaricoides etude gene rale et classifications. Numero special. Bull.Soc.Linn. lyon.49,1-1027.

[8]. Moser M. 1978-in:Keys to Agarics and boleti (Polyporales, Boletales, Agaricales, Russulales), Roger Phillips, London. Scientific Publishers (India), Jodhpur.
[9]. Pegler DN. 1983- The genus Lentinus A World Monograph'. Kew Bulletin Additional Series X. Royal Botanic Garden Kew.
[10]. Shaw PJA, Kibby G, Mayes J 2003. Effects of thinning treatment on an ectomycorrhizal succession under scots pine. Mycol. Res.107:317-328.
[11]. Singer.R., 1986. The Agaricales in Modern Taxonomy, Sven Koeltz Scientific Books, D-6240, Koenigstein, Germany.
[12]. Wasser, P.S. 2007. A book review;mycelium running; how mushrooms can help save the world. Herbalgram 76:50-57.

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