


"TAXONOMY AND DIVERSITY OF GONODERMA FROM THE PARBHANI AND NANDED DISTRICT" OF MARATHWADA, MAHARASHTRA (INDIA)
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Abstract :

Ganoderma is the genus from order Aphyllophorales with more than 300 sp. The type species Ganoderma lucidum is medicinally important and many other species are worked out for various medicinal properties. Only a valid species have been reported from India but the present study reports 03 species. The species are each described and the fruit bodies, spores and cutis are illustrated.

Keywords: *Aphyllophorales - Ganoderma take - Marathwada - medicinal mushroom - Parbhani and Nanded districts.*

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Introduction :

Ganoderma is largest genus in order aphylllophorales with more than 300 species it is called to cause root or buttrot of the hardwood trees, and also know as medicinally import mushroom in the Asian continent.

Kartson in 1881 established the genus Ganoderma with the type sp. G. Lucidum and number of sp has been described in the genus thereafter. The genius ganoderma was divided in two sub genus, ganoderma and Elfvingia by Kartsen in 1889 (steyaert, 1980)

The sub-genus Elfvingia was based on the name Boletus applanatus and the section was dedicated to the species with non-laccate pileated fruit body.

Different taxonomic characters were used for identification by various authors namely Murill (1902, 1903) Atkinson (1908), Coleman (1927), Cornor (1947), Steyaret (1972, 1980) worked extensively on the genus from nearly each continent of the world. He create many new sp or transferred many names.

In India, Bakshi (1971) contributes to the study of this genus, describing five species. Bilgrami et al. (1991), recorded seven species of Ganoderma in List, "Fungi of India." Whereas some species are reported in different databases of various states (<http://thausver.tn.nic.in/envis/cheak list fungi.html>, www.eunjabenvironment.com/bdlist.htm)

Material and Methods :

Collection of the samples was done from various locations from Parbhani and Nanded districts.

For the morphological details thin, hand sections were taken from the cutis, context and from the tube layer of each



sample respectively spores were isolated from a block of tube layer, technique described by Steyaert (1972). To loosen the hyphae, the section material was treated with 10% phloxine. These sections were again washed with water and finally stained with cotton blue. Lactoglylene (50%) was used as mounting media. All the preparation were semi permanent. The slides were observed under Bausch and Lomb compound microscope having a combination of 10x eyepiece and 10x, 45x and oil immersion (i.e. 100x), objectives.

The spores were observed under Olympus Bx-40 at 100x objective with phase contrast and the dermis sections at 40x objective of the same photographs were taken using Olympus Bx40 attached with photomicrography unit.

Result :

An artificial key prepared to differentiate the collected sp for the segregation and assignment of correct Taxonomic identity to the samples, keys of different authors viz, Bakshi (1971), Steyaert (1972, 1980), Ryvardeen and Johnsen (1980), Gilbrerston and Ryvardeen (1986), Gottlic and wright (1999 a.b.) and Ryvardeen (1995, 2000) were used.

Key to the species of *Ganoderma*.

1. Pileus non laccate; generally astipitate 2(*G. applanatum*)
1. Pileus lactate; stipitate2
2. Basidiocarp annual or pererial; sessile or centrally stipitate *G. Lucidum*.
2. Basidiocarp not sessile.....3.
3. Pileus dark to redish brown, or greyish yellow; spores truncate 7.5 to 10 cm, Tropical s.p. *G. ahmadii*.
3. Pileus dark to redish..... 4.

Species description :

G. applanatum (pers.) par; Buu.so.mycol.fr.5:67, 1889

Bas : *Boletus applanatus* pors; obs; myc. 2 :, 1799.

Ganoderma ahmadii – steyaert, personia 7 (1):91, 1972.

Basidiocarps :

Annual, stipitate, corky to woody on drying; pileus wide and shallow, suborbicular to subflabelliform, becoming funnel shaped on drying. 7.7 cm wide and broad, 3-4 mm thick; upper surface purplish brown, so reddish, purplish brown, centre slightly concave, rugulose, weakly laccate, lighter towards the margin with more or less distinct alternate rings; margin: entire whitish to yellow brown, upto 4 mm wide sterile below; pore surface whitish, becoming watery brown on bruising; pores suborbicular, 5-6 per mm; tubes short, p to 1 mm deep; context pale to dark brown, homogenous, 2-3 mm thick; stipe eccentric to centric, semicircular, 4-6 cm long, 1-1.5 cm in diameter single or connected at base, laccate, dark reddish brown to bluish brown.

Hyphal system :

Trimitic, generative hyphae hyaline thin walled, 2-5 mm wide with clamps, skeletal hyphae faintly brown, thick walled



to solid arboriform ending process; Binding hyphae; colourless, thick walled, 1-2 cm wide, branched; pilear crust thin up to 30 cm thick brownish, composed of calviform to cylindrical elements, 20-25 × 4-5 cm, irregularly arranged; 13 Basidiospores: ovoid to broadly ellipsoid, 7.5 – 10 × 5-6.5 cm, bitunicate, exospores, hyaline, endospore brownish, echinulate, Iki-ve habitat : A common sp on stumps of hardwoods unknown rot specimens examined : on stumps of hardwoods of undifferentiated host (mu-32)

Remarks :

North America, Europe, South Africa, Australia, Cylon, Newzealand, U.S.A., Canada, India, Asia Brazil, West Indies, Japan, Pakistan, Island..

Ganoderma lucidum (Cunt. : Fr) Korst.

Basidio Carps : Annual, centracy stipitate, pileus reniform or dimidiate upto cm in diameter, 1-2 cm. thick near the base; upper surface; first yellowish brown but soon redish & in older specimens purplish to almost redish black, glossy and shiny, smooth, cocentrally sulcate, crust thin and easily idenfied with nails; maraine : obtuse, Lighter to white; pore surface white to cream, brownish with age; porse 4-6 per mm, sub-orbicular tubes not stratified, whitish to pale brownish, upto 1 cm deep; upper surface first yellowish brown but soon redish in older specimens purplish to almost redish black, glossy and shiny, smooth concentrically sulkate, crust thin and easily identified with nails; maraine obtuse, Lighter to white; pore surface white to cream, brownish with age; pores 4-6 per mm, suborbicular; tubes not stratified, whitish to pale brownish upto 1 cm deep; context duplex, whitish or wood coloured above, brownish to dark brown near the tube layer, 1-1.5 cm thick near the base; stipe sup cylindrical, lateral or eccentric to central, upto 15 cm long, 2-3 cm in diameter, con coloures with pilear surface or dark purplish brown, laccate, stipe context white.

Hypal system: Trimitic; generative hyphae hyaline, thin welled, branched 3-4.5 wide; skaetal hyphae; yellowish brown thick called to solid, arboriform, skeletal stalks 3-4.5 cm wide; Binding hyphae: colourless, think walled sinuous, branched, 1-2 cm wide often bovista type; Besidia: clavate, 20-25 x 6.8 cm basidiospores; 8.5-11 × 6-7 cm, ovoider truncate bitunicate, exospores, hyaline, smooth, endosore, echinulate, brownish, sometimes guttulate, Ikive.

Habit : growing on roots and trunks of many hard wood trees; causing white spongy rot. Specimens examined; growing on roots and trunks of hard woods of magnifere indica (mu-27) Azadirachta indica (mu-35) and zizyphus Jujuba (Mu - 03).

Remarks :

America, Africa, West Indies, Bengal, U.S.A., Austrilia, Mexico Ceylon, Japan, Brazil, Afganistan and Pakistan.

Ganoderma applanitum : (Pers) pat; *Hymenomyc.* Eur, (Paris) : 143 (1887) = *boletus applanatus* Pers : bos. *Pycol.* 2:2 1799

Basidiocarp seesile, woody to corky, applanate upto 40 cm diameter, 1.5-5 cm thick at base, shelf like. Upper surface pale grey to dark brown, crastuse with concentric zonation, sulcate covered with layer of chocolate, brown



spore appearing dusty. Margin 1 to 10 mm, thick, sterile rounded, turning brown on drying. Pore surface : Whitish milky to coffee, rough. Pore 4-5 per mm, spherical to ovoid. Tube multilayer, 4-8 layer in perennial specimen separated by layer. Context thick, purplish brown, shining. Cutis type trichodermis. Hyphal system : Trimitic, generative hyphas, 3.3-4.1 cm diameter, pale yellow with clamp connection; skeletal hyphas 5.8 to 6.6 cm diameter, dark brown; Blending hyphae 7.5 cm diameter, dark brown. Basidiospore: 7-8 x 5-6 cm, plae yellow, SI:1.3
Specimens examined : On dead stamps of tectona grandis (Mu – 378). Geographical distribution: forest region USA, Canada, Germany, Austria, India, Nepal, Pakistan.

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