

Original Research Article

<https://doi.org/10.20546/ijcmas.2019.805.272>

Cortinarius iodes, a New Record from India

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ABSTRACT

Keywords

Cortinarius iodes,
Leaf litter, *Bridelia
retusa* and *Bauhinia
variegata* trees

Article Info

Accepted:
18 April 2019
Available Online:
10 May 2019

The present article reports one Cortinariaceae, *Cortinarius iodes* growing in the campus of Tropical Forest Research Institute, Jabalpur, Madhya Pradesh on leaf litter, under *Bridelia retusa* and *Bauhinia variegata* trees. This constitutes a new fungal record from India, earlier it was reported from 'North America'. A list of 16 species of *Cortinarius* reported from India is also given along with their distribution and habits.

Introduction

Cortinarius is a member of Cortinariaceae, Agaricales was reported to be mycorrhizal with deciduous trees. *Cortinarius iodes*, commonly known as the spotted cort or the viscid violet cort. This mushroom has no distinctive taste or odor. Although it is edible but not recommended for consumption. The fruit bodies grow singly or in groups on litter.

Fifteen species of genus *Cortinarius* were reported from India, which mostly occurred from eastern Himalayan and Kerala (Berkeley, 1852; Bhavanidevi and Nair, 1983; Florence, 2004; Chona *et al.*, 1958; Sathe and Daniel 1980; Sathe *et al.*, 1980; Mohanan, 2011; Peintner *et al.*, 2003; Sharma *et al.*, 1978).

In the present article, *Cortinarius iodes* is reported as a new fungal record from India. Previously the species was reported from North American (Berkeley and Curtis, 1853).

Materials and Methods

The specimen was collected from campus of Tropical Forest Research Institute, Jabalpur, Madhya Pradesh during September, 2018 (Fig. 12). Identification of fungus was done with the help of literature (Berkeley, 1852; Bhavanidevi and Nair, 1983; Florence, 2004; Chona *et al.*, 1958; Sathe and Daniel 1980; Sathe *et al.*, 1980; Mohanan, 2011; Peintner *et al.*, 2003; Sharma *et al.*, 1978) and matter available on net. The specimen was deposited in the Mycology Herbarium, Tropical Forest Research Institute, Jabalpur. The slides were

prepared in lacto-phenol and cotton blue and observed under advance Research Microscope, make Leica, Germany and photomicrographs were taken with a digital camera attached to the microscope.

Results and Discussion

Taxonomic description

Cortinarius iodes berk. & M.A. curtis (Figures 1-11)

(Cortinariaceae, Agaricales, Agaricomycetidae, Agaricomycetes, Agaricomycotina, Basidiomycota) \equiv *Gomphos iodes* (Berk. & M.A. Curtis) Kuntze, Revis. gen. pl. (Leipzig) 2: 854 (1891)

The cap is initially bell-shaped before becoming broadly convex and then flat on maturity, and attains a diameter of 5-6.5cm. The cap surface is slimy (in wet weather) and smooth, and has a lilac or purplish color. The flesh is white, firm, and thin. The color fades on maturity, and the cap develops irregular yellowish spots, or becomes yellowish in the center. Gills are attached to the stem and packed together closely. They are lilac to violet when young, but become rusty brown to grayish cinnamon when the spores mature. The stem measures 5–6cm long by 0.8–1cm thick, and is nearly equal in width throughout other than a somewhat bulbous base. It is solid slimy, smooth, and has violet or purplish colors that are usually lighter than the cap; sometimes, the stem base is more or less white. The cobweb-like, pale violet partial veil leaves a zone of thin, purple or rusty fibers on the upper stem. Basidia are four-spored, club-shaped, and measuring, 18.75–25 x 5–12.5 μ m. Basidiospores, rusty-brown, elliptical, with a finely roughened surface, measuring 2.5–6 x 2.5–5 μ m. Both cheliocystidia and pleurocystidia are absent from the hymenium; the gill edge is populated

by basidia and their undeveloped equivalents, basidioles. The cap cuticle comprises a distinctive layer of 5–8 μ m wide hyphae. Clamp connections are present in hyphae throughout the fruit body.

Collection examined

On leaf litter growing under *Bridelia retusa* and *Bauhinia variegata* trees, near Scientists' hostel building, TFRI Campus, Jabalpur (MP), 31/09/2018; Specimen deposited in pathology museum at Tropical Forest Research Institute (TF 4150).

Cortinarius iodes forms mycorrhizal associations with deciduous trees, particularly oaks. The fruit bodies grow in humus and litter fall, sometimes singly, but more often scattered or in groups under hardwood trees (Mohanani, 2011; Peintner *et al.*, 2003; Roody, 2003). Typical habitats include bog edges, swampy areas, and hummocks. Fruiting usually occurs from July to November. In North America, it is common in eastern regions, and rare in the Pacific Northwest. Its distribution extends from eastern Canada south into Central America and northern regions of South America, northern Asia (Roody, 2003) and it also occurs in Central India.

C. iodes is very similar with *C. iodeoides* in appearance but can be distinguished from the former by its bitter-tasting cap cuticle (Roody, 2003). This species is not reported from India. A purple colored species, *C. purpurascens* was reported from Chambaghat, Solan, Himachal Pradesh (Sharma *et al.*, 1978). Another similar species reported includes, *C. traganus*, which has a dry, light purple cap and stem and a bad odor (Sundberg and Bessette, 1987). Two other widespread species with violet coloring and slimy caps are *C. salor* and *C. croceocaulerulus* (Table 1).

Table.1 *Cortinarius* species reported from India

S.N.	Name of fungus	Host/ Substrate	Distribution	Reference
1.	<i>Cortinarius cinnabarinus</i> Fr.	On ground	Thiruvananthapuram, Kerala	Bhavanidevi, Nair (1983); Florence (2004)
2.	<i>Cortinarius conopileus</i> K.A. Thomas, M.M. Moser, Peintner & Manim.	On ground	Wayanad, Kerala	Peintner <i>et al.</i> , (2003)
3.	<i>Cortinarius deceptivus</i> Kauffman	on ground	Delhi	Chona <i>et al.</i> , (1958)
4.	<i>Cortinarius emodensis</i> Berk.	on pine wood	Lachen, Sikkim, Himalayas	Berkeley (1852)
5.	<i>Cortinarius flammeus</i> Berk.	on pine wood	Sikkim, Himalayas	Berkeley (1852)
6.	<i>Cortinarius graminicola</i> Sathe & S.D. Deshp.	on ground	Maharashtra	in Sathe <i>et al.</i> , (1980)
7.	<i>Cortinarius iodes</i> Berk. & M.A. Curtis	Growing on litter under <i>Bridelia retusa</i> and <i>Bauhinia variegata</i> trees	Jabalpur, Madhya Pradesh	This article
8.	<i>Cortinarius keralensis</i> K.A. Thomas, M.M. Moser, Peintner & Manim.	on ground	Wayanad, Kerala	Peintner <i>et al.</i> , (2003)
9.	<i>Cortinarius palmicola</i> Sathe & J.T. Daniel (as <i>Cortinarius palmicolous</i>)	on ground	Kollam, Kerala	in Sathe and Daniel (1980); Florence (2004)
10.	<i>Cortinarius phlegmophorus</i> K.A. Thomas, M.M. Moser, Peintner & Manim.	on ground	Wayanad, Kerala	Peintner <i>et al.</i> , (2003)
11.	<i>Cortinarius pholideus</i> (Lilj.) Fr.	on ground	Muthanga and Wayanad, Kerala	Mohanan (2011)
12.	<i>Cortinarius purpurascens</i> Fr.	on soil	Chambaghat, Solan, Himachal Pradesh	Sharma <i>et al.</i> , (1978)
13.	<i>Cortinarius rufo-olivaceus</i> (Pers.) Fr. = <i>Cortinarius vinosus</i> Cooke	on pine wood	Sikkim, Himalayas	Berkeley (1852)
14.	<i>Cortinarius saniosus</i> (Fr.) Fr. ≡ <i>Agaricus saniosus</i> Fr.	on pine wood,	Sikkim, Himalayas	Berkeley (1852)
15.	<i>Cortinarius vinosulus</i> Sacc.	on pine wood	Sikkim, Himalayas	Berkeley (1852)
16.	<i>Cortinarius violaceus</i> (L.) Gray ≡ <i>Agaricus violaceus</i> L.	on wood	Myrong, Khasi hills, Meghalaya	Berkeley (1852)

Fig.1-2 *Cortinarius iodes* fruit bodies in habit



Fig.3-4 *Cortinarius iodes* fruit bodies in habit showing pileus, gills and stipe



Fig.5-6 *Cortinarius iodes*, hyphae and section showing basidia

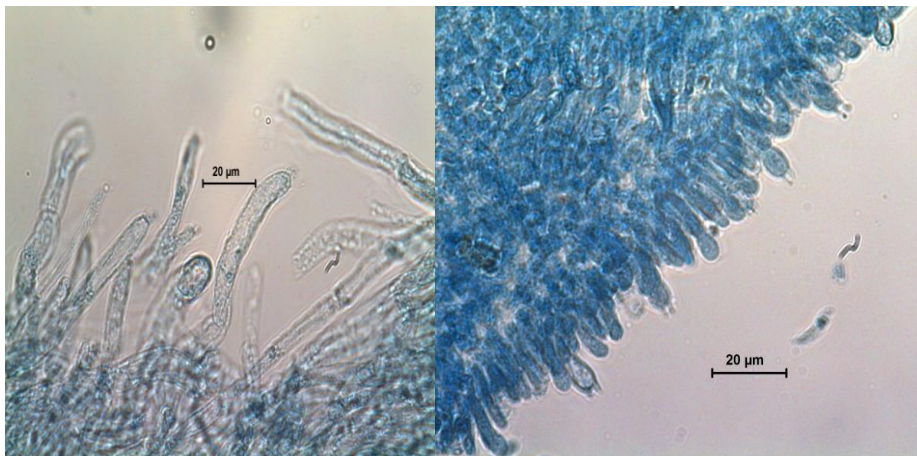


Fig.7-8 *Cortinarius iodes* section showing basidia and a single basidium

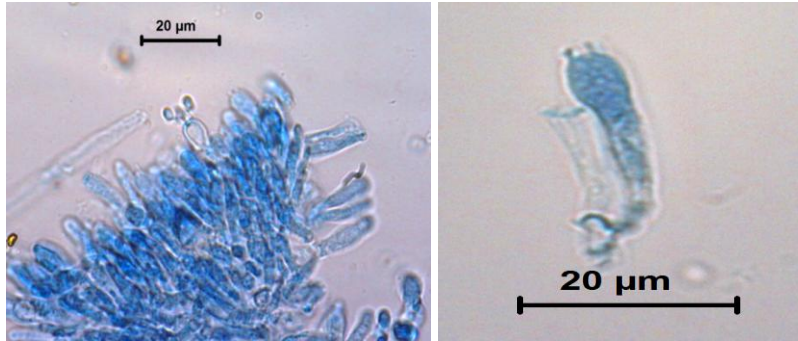


Fig.9-11 *Cortinarius iodes*, basidiospores in low power and enlarged basidiospores

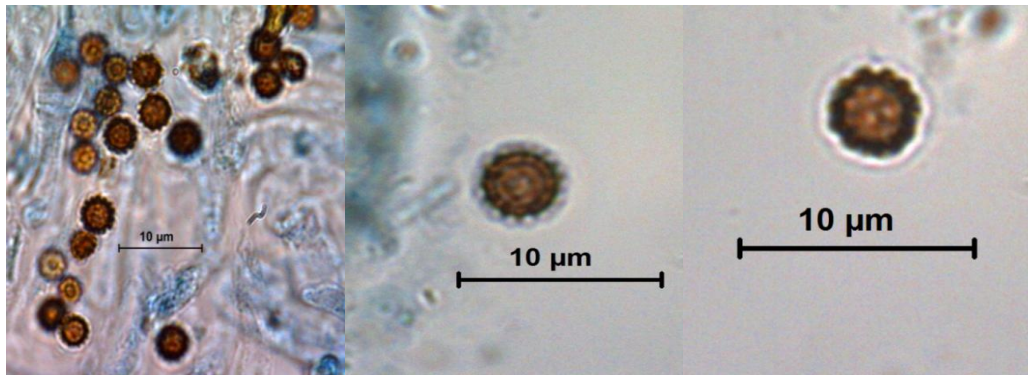
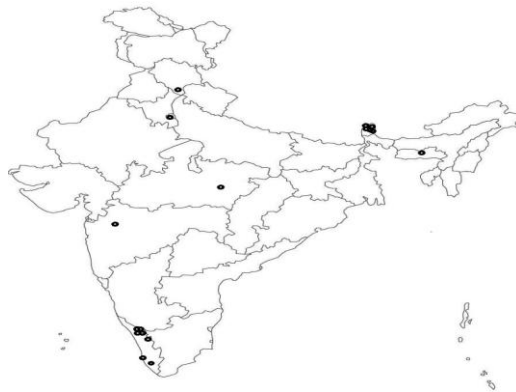


Fig.12 Map of India showing distribution of *Cortinarius* species



These mushrooms can be distinguished from *C. iodes* by the absence of yellowish spotting (Roberts and Evans, 2011). A North American species *C. oregonensis* has a paler lilac cap with a central region that is yellowish or brownish and with smaller spores (Smith, 1939). *Inocybe lilacina*, a non-*Cortinarius* species has a dry, silky cap with

prominent umbo was also reported (Roody 2003).

In conclusion, *Cortinarius iodes* growing in litter under *Bridelia retusa* and *Bauhinia variegata* trees at Jabalpur, Madhya Pradesh is reported as new fungal record from India.

Acknowledgement

The authors are thankful to the Director and Group Coordinator (R), Tropical Forest Research Institute, Jabalpur for providing the research facilities. The work presented here was conducted under project ID No. 224/TFRI/2016/Patho-1(22) funded by Indian Council of Forestry Research & Education (ICFRE), Dehradun.

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How to cite this article:

Verma, R.K., Vimal Pandro, Diwyansh Raj and Rao, G.R. 2019. *Cortinarius iodes*, a New Record from India. *Int.J.Curr.Microbiol.App.Sci*. 8(05): 2306-2311.
doi: <https://doi.org/10.20546/ijcmas.2019.805.272>