

***Irpex laceratus* (N. Maek., Suhara & R. Kondo) C.C. Chen & Sheng H. Wu (Basidiomycota: Polyporales: Irpicaceae): A New Record from India**

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ABSTRACT

A *Irpex* species was collected during a field survey in Kolhapur district, Maharashtra, India. Based on Macro-micro morphological characteristics, the species was identified as *Irpex laceratus*. A literature review confirms this to be the first record of the species from India.

Keywords: *Irpex*, Polypore, White rot, India

INTRODUCTION

Irpicaceae Spirin & Zmitrovich, was established by Spirin (2003) and typified by the genus *Irpex* (1825: 81). Irpicaceae, together with Meruliaceae Rea and Phanerochaetaceae Jülich, belongs to the phlebioid clade within the Polyporales Gäum (Miettinen *et al.*, 2016; Justo *et al.*, 2017; Chen *et al.*, 2021). According to Chen *et al.*, (2021), 13 genera are accepted in Irpicaceae and the genera *Emmia* Zmitrovich, Spirin & Malysheva (2006: 33), *Flavodon* Ryvarden (1973:3) and *Hydnopolyporus* D.A. Reid (1962: 151) are regarded as congeneric with *Irpex*.

The name *Irpex* Fr. (Irpicaceae, Polyporales) has been in use for nearly 200 years and typified by *Irpex lacteus* (1828: 142). The genus is characterized by resupinate, cushion-like, effused-reflexed, or stipitate-pileate basidiocarps with smooth, poroid, labyrinthine, irpicoid, hydroid or irregular hymenophore, a monomitic or dimitic hyphal system with simple septate generative hyphae, encrusted cystidia present in some species, and smooth, thick-walled, hyaline, ellipsoid to broadly ellipsoid or subglobose basidiospores (Chen *et al.*, 2021). Species in the genus cause a white rot. The genus *Irpex* (Irpicaceae) is represented by about 53 species worldwide (species fungorum accessed on dated 15-03-2025) and from India it represent about 7 species (Roy *et al.*, 2022; Randive, 2013)

During the field surveys conducted in various localities of Rajaram College campus, Kolhapur district and collected some interesting specimens of non - poroid and poroid fungi. On the basis of macro - micro morphological characters and comparison with the published literature these specimen were

identified as *Irpex laceratus* (N. Maek., Suhara & R. Kondo) C. Chih Chen & Sheng H. Wu are being described as new to India and also addition to mycoflora of Maharashtra state.

MATERIALS & METHODS

The fresh specimen was photographed in field with the help of Mobile camera with magnifying lance showing all Macro-morphological details of the specimen. The specimen was brought to the laboratory. Free hand sections of the fruit bodies were taken carefully and sections were stained in 1% phloxine in water, 1% Congo red in water, 1% cotton blue in lacto-phenol. Microscopic observation was made under Lawrence and Mayo N-300M research microscope. The specimens were air dried and preserved in polythene bags with field numbers and deposited in the herbarium of Department of Botany, Rajaram College, Kolhapur. Specimen No. Y₂₃V₁P₂.

Eight basidiospores, six basidia were measured (N) and recorded as Q value = the length/width ratio of a single spore and basidia.

The macro- and micro morphological details were compiled in the form of a description which was compared with the published literature (Suhara *et al.*, 2003; Che *et al.*, 2021; Wahab *et al.*, 2018; Zhan *et al.*, 2022) for identification.

RESULTS & DISCUSSION

Irpex laceratus (N. Maek., Suhara & R. Kondo) C. Chih Chen & Sheng H. Wu, Fungal Diversity 111: 411 (2021)

Figure 1

Fruiting body annual, effused resupinate, adnate, soft when fresh, fragile, firmly attached to the

substrate. **Hymenophore** poroid to denticulate. **Context** white, buff, ochreous to fulvous when fresh, dissepiments frequently lacerate, up to 300 μm thick. **Pores** angular, 1-3 per mm, margin white, tube layer concolorous with the context, up to 3 mm thick, dissepiments thin, entire to lacerate, subiculum buff white. **Hyphal system** monomitic. Contextual hyphae 2.5-5.8 μm in diameter, smooth, thin to slightly thick-walled, simple-septate without

clamp connection. Tramal hyphae 2.5-5.2 μm in diameter, smooth, thin to slightly thick-walled, simple-septate without clamp connection. **cystidia** absent. **Basidia** clavate, $12.3-15.5 \times 4.3-5.7 \mu\text{m}$, $Q=2.4-2.9$, $N=8$, without basal clamp connection, 4 sterigmate, basidioles abundant, in shape similar to basidia, smaller than basidia, $8.5-12.5 \times 4-5.5 \mu\text{m}$. **Basidiospores** oblong-ellipsoid to ellipsoid, $3.5-5 \times 2.5-3.5 \mu\text{m}$, $Q=1.4-1.8$, $N=6$, smooth, thin-walled.

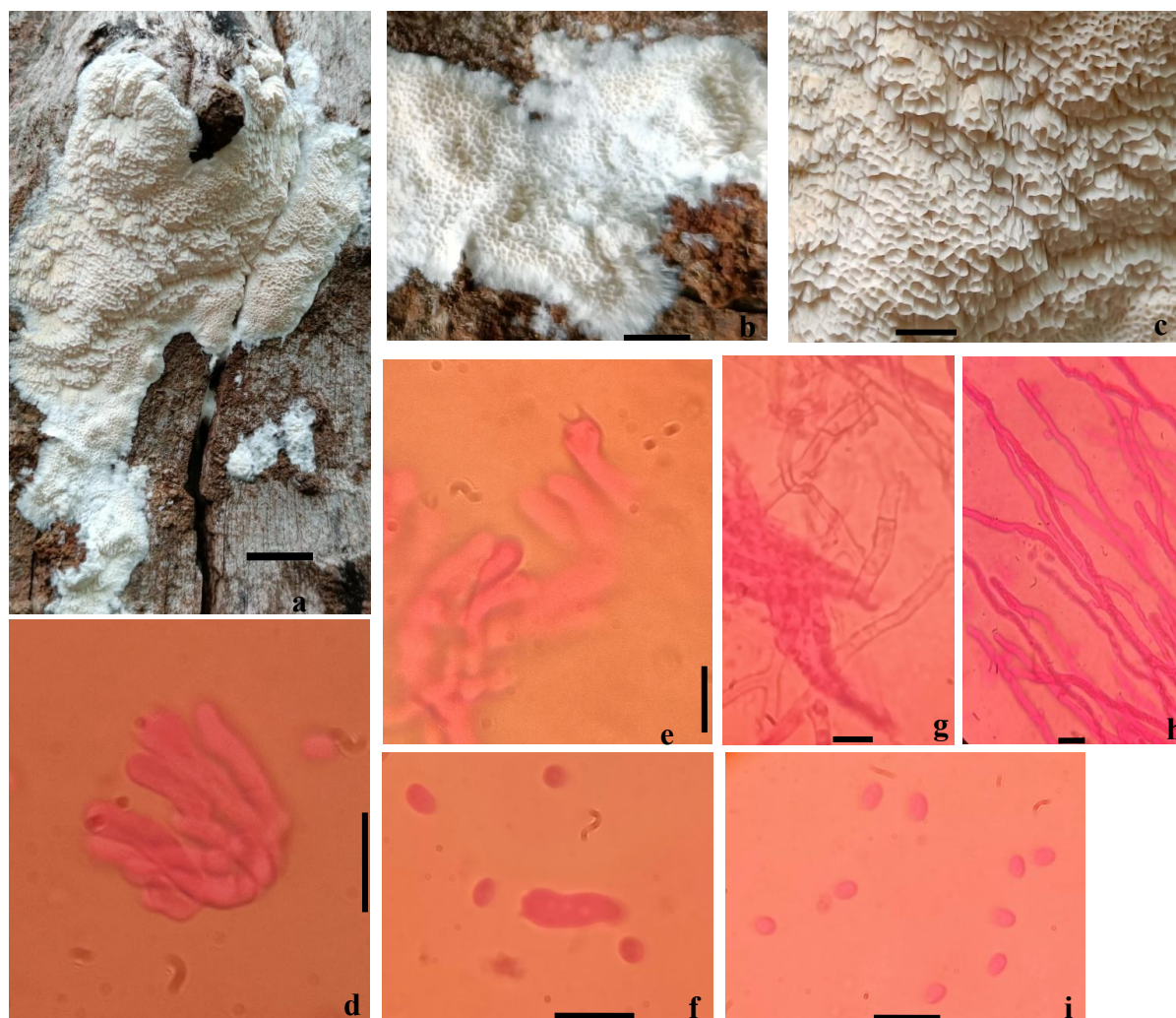


Figure 1: Basidiocarp of *Irpex laceratus*. a, Mature fruiting body; b, young fruiting body; c, Pore surface; d, Basidioles; e-f, Basidia; g-h, Generative hyphae with simple septa; i, Basidiospores. Scale Bar: a=18mm; b=16mm; c=1mm; d – i=10 μm .

Type of Rot - white rot

Specimens examined - India, Maharashtra State, Kolhapur district, RCK campus, 16.686656° N, 74.256739° E, on dead angiosperm branch (unidentified), 30 June 2023, Y.S. Patil and M. A. Vedpathak. Y₂₃V₁P₂.

Ecology and distribution: Mostly on angiosperms. Widely distributed in East and

Southeast Asia (Suhara 2003; Dai 2012; Jang *et al.*, 2012; Wahab *et al.*, 2018; Wulandari *et al.*, 2018; Wu *et al.*, 2020; Che *et al.*, 2021). China, Hubei Province: Wuhan, Jiufeng National Forest Park, on angiosperm branch, 25 Jun 2006, S.H. Wu & S.Z. Chen, Wu 0606-167 (TNM F24993); Taiwan, Nantou County, Jenai Township, Aowanta, 1200 m, on angiosperm branch, 28 Aug 2017, C.C. Chen, GC 1708-351 (TNM F33092); Taichung City, National

Museum of Natural Science, 50 m, on rotten angiosperm trunk, 28 Feb 2009, H.C. Wang, WHC 1372 (TNM F23945); Kaohsiung City, Chiahshien, PaiYun Villa, on trunk, 15 Jun 2003, S.C. Lee, Wu 0306-1 (TNM F15193); Vietnam, Lam Dong Province: Bi Doup Nui Ba Nationa Park, 12°10'45" N, 108°40'47" E, 1447 m, on angiosperm trunk, 15 Oct 2017, C.C. Chen, GC 1710-42 (TNM F32861); Japan, Kyushu Island, on branch of *Quercus acutissima*, MZ-340 (TMI 25485), Pakistan, Khyber Pakhtunkhwa, Malakand, Totakan, 570 m asl, on bark of *Albezzia lebbek*, 08. 8 2015, A. Wahab (AW-111).

Note: *Irpex laceratus* is characterised by having white to cream, effused basidiocarps with entire to lacerate pores (1-3 per mm), oblong-ellipsoid to ellipsoid basidiospores ($3.5-5 \times 2.5-3.5 \mu\text{m}$), and the absence of cystidia. This species was originally

placed in *Ceriporia* as it has effused basidiocarps with poroid hymenophore, and lacks cystidia (Suhara 2003). Wu *et al.*, (2017) transferred this species to *Emmia* based on results of phylogenetic analyses. Recently, Che *et al.*, (2021) place this species in *Irpex* based on morphological and phylogenetic evidence. *Irpex laceratus*, *I. latemarginatus*, *I. jinshaensis* and *I. subulatus* are all polypores with a poroid hymenophore. Morphologically, *I. laceratus* is the same in having a poroid hymenophore, however, *I. laceratus* has the largest pore size (1–3 per mm) compared to *I. jinshaensis* (3–5 per mm, Tian et al. 2022) and *I. subulatus* (1–2 mm wide, Hjortstam & Ryvardeen 1982). *I. latemarginatus* (1–3 per mm, Zmitrovich & Malysheva 2014). *I. laceratus* and *I. latemarginatus* share similar morphological characters but *I. laceratus* has smaller spore ($3.5-5 \times 2.5-3.5 \mu\text{m}$) and *I. latemarginatus* has longer spore ($5.5-7 \times 3-4 \mu\text{m}$).

Table: Characteristics of the *Irpex laceratus* and other morphological similar species

Species	Basidiomata	Pore Size / shape	Hyphae	Cystidia	Basidiospores shape /size	Refences
<i>Irpex lacteus</i> (Fr.:Fr.) Fr.	Annual, effused-reflexed or resupinate	angular, 2-3 per mm	Dimitic	Present	oblong to cylindric, 5-7 x 2-3 μm	Ryvarden and Gilbertson, 1993
<i>Irpex Zonatus</i> Berkeley	Annual, Pileate	angular or linear, 3-4 per mm	Dimitic	Absent	elliptical, 4-6 x 1.5-2 μm	Cunningham, 1949
<i>Irpex latemarginatus</i> (Durieu & Mont.) C. Chih Chen & Sheng H. Wu	Annual, resupinate	angular, 1-3 per mm	Monomitic	Present	clavate, 16-20 x 5-7 μm	Ryvarden and Gilbertson, 1994
<i>Irpex jinshaensis</i> Z.B. Liu, X.M. Tian & Y.C. Dai	Annual, resupinate	angular, 4-6 per mm	Monomitic	Present	subglobose to globose, 4-5 $\times$ 3.5-4 μm	Tian <i>et al.</i> , 2022
<i>Irpex subulatus</i> (Ryvarden) Z.B. Liu & Y.C. Dai	Annual, resupinate to effused-reflexed	angular, 1-2 per mm	Monomitic	Present	ellipsoid, 4-5 $\times$ 2-2.5 μm	Hjortstam and Ryvarden, 1982
<i>Irpex laceratus</i> (N. Maek., Suhara & R. Kondo) C. Chih Chen & Sheng H. Wu	Annual, effused, resupinate	angular, 1-3 per mm	Monomitic	Absent	oblong-ellipsoid to ellipsoid, 3.5-5 $\times$ 2.5-3.5 μm	This work

Species	Basidiomata	Pore Size / shape	Hyphae	Cystidia	Basidiospores shape /size	References
<i>Ceriporia cystidiata</i> Ryvarden & Iturriaga	annual, resupinate,	round to angular, slightly irregular, 6-8 per mm,	Monomitic	Present	allantoid, 4-4.5 x 1 µm	Wulandari <i>et al.</i> , 2018
<i>Ceriporia pseudocystidiata</i> B.S. Jia & Y.C. Dai	annual, resupinate	round to irregular, very shallow, 4-5 per mm	Monomitic	Present	Allantoid, (3.5-)3.7-4.3 × (1.4-)1.6-1.8(-1.9) µm	Wulandari <i>et al.</i> , 2018
<i>Ceriporia alachuana</i> (Murrill) Hallenb	annual. resupinate	angular. 3-5 per mm	Monomitic	Absent	cylindric to slightly oblong ellipsoid, 4-5 x 2-2.5 µm	Suhara <i>et al.</i> , 2003
<i>Ceriporia ferruginicincta</i> (Murrill) Ryvarden	Annual, effused, resupinate	angular and thin-walled, 6-8 per mm	Monomitic	Absent	subcylindrical, 3.5-5 x 2-3 µm	Suhara <i>et al.</i> , 2003

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