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RESEARCH ARTICLE

AURICULARIA SINODELICATA (*AURICULARIACEAE*) Y.C. DAI & F. WU, A NEW RECORD FOR THE INDIAN MYCOBIOTA

Arvind Parihar[1]*

Botanical Survey of India, Arunachal Pradesh Regional Centre, Itanagar, Arunachal Pradesh , India
Email: arvind_peaec@rediffmail.com

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Abstract: *Auricularia*, a genus of macrofungi with broad geographical distribution, is highly valued for its edible and medicinal properties. It ranks as the third most extensively cultivated mushroom worldwide due to its remarkable nutritional and bioactive attributes. In the Present communication *Auricularia sinodelicata* is reported first time from the India with detailed descriptions and colour illustrations.

Keywords: Arunachal Pradesh, *Auricularia*, India, New Record, Taxonomy

INTRODUCTION

Arunachal Pradesh (the land of the dawn-lit mountains) is a state in North-east India with an area of 83,743 km^2. It is having the largest area among the other states of North-east India and the largest mountainous state of India. Arunachal Pradesh, is famous for its rich and diverse flora, because of to its unique geographical position and varying climatic conditions. Numerous rivers and streams traverse its landscape, contributing to its hydrological diversity. The region is regarded as one of the important hotspots of extraordinary biodiversity, hosting a wide array of flora and fauna. Additionally, Arunachal Pradesh is home to multiple indigenous communities, whose cultural practices and sustainable interactions with the environment have contributed to the preservation of its ecological balance. Among the various wild resources utilized by these communities, mushrooms hold significant importance. Many species of wild mushrooms are harvested and consumed as food, reflecting both the ecological knowledge and dietary habits of the indigenous populations of this wonderful state. Many species of the Genus *Auricularia*, commonly known as "Ear Fungi" are widely used as a food by the local people of Arunachal Pradesh.

Members of the genus *Auricularia* (Auriculariaceae, Auriculariales), typified by *Auricularia mesenterica* (Dicks.) Pers. are widely distributed and recognized for their ecological, economic, and medicinal properties (Wu et al. 2021). These species play a crucial role in the degradation of forest ecosystems, particularly in tropical forests, typically colonizing angiosperm wood, such as dead trees, stumps, fallen trunks, branches, and decayed wood, with a few species also inhabiting gymnosperm wood (Dai & Bao, 2007; Baldrian & Lindahl, 2011). Several *Auricularia* species are highly valued as edible and medicinal mushrooms, particularly in China and other East Asian countries, where they play a significant role in traditional diets and medicine (Wu et al., 2021). Morphologically, *Auricularia* is distinguished by its gelatinous, resupinate to substipitate basidiomata with pilose upper surfaces, cylindrical to clavate and transversely three-septate basidia containing oil guttules, and hyaline, thin-walled, allantoids basidiospores (Lowy, 1951; Kobayasi, 1981). As per as per the morphological examinations and phylogenetic analyses conducted by Wu et al. 2021, 37 species of *Auricularia* are recognized worldwide. Although *Auricularia* can be differentiated from other genera within the family *Auriculariaceae*, but species identification based on macromorphological features, such as size of abhymenial hair, size of basidiospores, and the presence or absence of a medulla, remains challenging (Lowy 1952; Kobayasi 1981), because of overlapping morphological charecters. In Asian

*Corresponding Author

context many workers significantly contributed on the taxonomical and phylogenetical studies of the Genus *Auricularia* (Kobayasi 1981, Bandara et al. 2017, Wu et al. 2015, Wu et al. 2021). During the routine survey of Arunachal Pradesh, India several specimens of Genus *Auricularia* were collected by the author. After thorough macro and micromorphological characterization of these samples one specimen is identified as *Auricularia sinodelicata* Y.C. Dai & F. Wu. This species is earlier reported from China only and this article reports it first time for the India.

MATERIALS AND METHODS

Routine Survey and exploration tours of different districts of Arunachal Pradesh were conducted during the monsoon seasons of 2023–2024 and specimens of macro fungi were collected. Specimens were photographed with the help of a Camera (Nikon P950) and also with the mobile showing important morphological features in the field and also in the base camp before drying. After macro-morphological charecterization, specimens were dried with the help of drier for future study. Colour codes and terminology follows Kornerup and Wanscher (1978). To study the microscopic features, first, a piece of basidiomata was soaked in water. Detailed observations of micromorphological structures, like basidiospores, cross-sections of the basidiomata, abhymenial hairs, hymenium were done using a light microscope (Olympus CX43 and Olympus BX 52). Photographs of these structures were obtained through an attached dedicated camera, with the free-hand sections of desiccated samples mounted in a solution comprising 5% potassium hydroxide (KOH), 30% glycerol, phloxine, and cotton blue either separately or together. Measurements of basidiospores were done for twenty basidiospores. The dimensions of the basidiospores, along with their length/width ratios (Q), are presented as minimum, mean, and maximum values. The nomenclature of herbaria is

RESULTS AND DISCUSSION

Auricularia sinodelicata Y.C. Dai & F. Wu

Basidiomata 18–55×16–45, Gelatinous, fleshy, soft, caespitose, imbricate sessile or substipitate, light orange (5A5) to orange gray (6B2) to grayish orange (6B3); pileus projecting up to 55 mm, 1–2 mm thick, discoid or auriculate, margin entire, and brownish orange (6C4–6C5) when dry; upper surface scantly pilose, azonate; hymenophore surface conspicuously reticulate orange white (5A2) to pale orange (5A3). Thickness 1140–1460 µm when dry; medulla indistinctly present near the hymenium; crystals absent; abhymenial hairs 45–70 × 6–8 µm, with slightly swollen base or centre, thick-walled, with a wide or narrow septate lumen, apical tips acute or obtuse, single, hyaline; hyphae 2–4 µm in diam., with clamp connections.; basidia 40–50 × 4–4.5 µm, clavate, transversely 3-septate, with oil guttules; cystidioles absent. Basidiospores 9–(11.10)–12.50 × 4–(5.20)–6.0, Q = 1.83–(2.10)–2.25, allantoid, thin-walled, smooth, usually with one to two large guttules, hyaline.

Specimens Examined: India, Arunachal Pradesh, Tirap District, Khonsa, Lazo basti, alt. 1179 m 26º57' 51.62" N, 95º30' 31.10" E, 15.06.2024, on a dead wood log, A. Parihar AP 24-48 (ARUN F 41).

Notes: The macro- and micromorphological characteristics of the examined specimens align closely with the original description of *Auricularia sinodelicata* Y.C. Dai & F. Wu (Wu et al., 2021). Presence of morphological characters like porose-reticulate hymenophore surface, absence of crystals, small abhymenial hairs (<100 µm), small basidiospores, confirm the placement of these specimens within the *Auricularia delicata* complex, as defined by Wu et al. (2021). While the present specimens showing some similarities to *Auricularia delicata*, the presence of a pilose surface, along with slightly longer basidia and abhymenial hairs, distinguishes it from *Auricularia sinodelicata* additionally, *Auricularia delicate* has a distribution in Africa. *Auricularia tremellosa*, another morphologically similar species, differs from the present specimens due to its pilose abhymenial surface, poroid hymenophore, and geographic distribution, in the America. In contrast, *A. sinodelicata*, with its distribution in China, seems more closely related to present specimen. Based on these distinct macro- and micro-morphological characters and geographic considerations, the present specimen is identified and treated as *Auricularia sinodelicata*.

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Legends for Figures:

Fig. 1: *Auricularia sinodelicata* Y.C. Dai & F. Wu A. Habitat of the basidiomata; B. Basidiomata with scale showing abhymenial surface and strongly reticulate hymenial surface; C.Habit of the basidiomata; D. Colour change of basidiomata after collection and drying; E. Cross section of the basidiomata; F. Abhymenial hairs; G. Basidiospores. Scale Bars: E = 100 µm; F & G = 10 µm.

REFERENCES

Baldrian, P. and Lindahl, B. (2011). Decomposition in forest ecosystems: After decades of research still novel findings. *Fungal Ecology*, **4**: 359–361, doi:10.1016/j.funeco.2011.06.001.

Google Scholar

Bandara, A.R., Karunarathna, S.C., Phillips, A.J.L., Mortimer, P.E., Xu, J., Kakumyan, P. and Hyde, K.D. (2017). Diversity of *Auricularia* (*Auriculariaceae, Auriculariales*) in Thailand. *Phytotaxa*, **292** (1): 19–34.

Google Scholar

Dai, Y.C. and Bau, T. (2007). Illustrations of Edible and Medicinal Fungi in North eastern China; Scientific Press: Beijing, China 231p.

Google Scholar

Duncan, E.G. and Macdonald, J.A. (1967). Micro-evolution in *Auricularia auricula*. *Mycologia*, **59**: 803–818.

Google Scholar

Holmgren, P.K, Holmgren, N.H. and Barnett, L.C. (1990). Index Herbariorum. Part I: Herbaria of the world, 86th ed. Bronx: New York Botanical Garden, USA.

Google Scholar

Jahedi, A., Safaie, N., Goltapeh, E.M. and Ahmadifar, S. (2024). *Auricularia* (wood ear mushroom) genus: a contribution to classification and new species records for Iran and world. *Plant and Fungal Systematics*, **69**(2): 205–217. DOI: https://doi.org/10.35535/pfsyst-2024-0019.

Google Scholar

Kobayasi, Y. (1981). The genus *Auricularia*. *Bulletin of the National Science Museum, Tokyo*, **7**: 41–67.

Google Scholar

Kornerup, A. and Wanscher, H. (1978). Methuen Handbook of Colour. 3rd ed. Eyre Methuen Ltd., London, UK.

Google Scholar

Looney, B. Birkebak, J. and Matheny, P.B. (2013). Systematics of the genus *Auricularia* with an emphasis on species from the south-eastern United States. *North American Fungi*, **8**:1–25, doi:10.2509/naf2013.008.006.

Google Scholar

Lowy, B. (1951). A morphological basis for classifying the species of *Auricularia*. *Mycologia*, **43**:351–358.

Google Scholar

Lowy, B. (1952). The genus *Auricularia*. *Mycologia*, **44**: 656–692.

Google Scholar

Wu, F., Yuan, Y., Rivoire, B. and Dai, Y.-C. (2015). Phylogeny and diversity of the *Auricularia mesenterica* (Auriculariales, Basidiomycota) complex. *Mycological Progress*, **14**:42. DOI 10.1007/s11557-015-1065-8.

Google Scholar

Wu, F., Tohtirjap, A., Fan, L.-W., Zhou, R.L. Alvarenga, M., Gibertoni, T.B. and Dai, Y.-C. (2021). Global Diversity and Updated Phylogeny of *Auricularia* (Auriculariales, Basidiomycota). *Journal of Fungi*, **7**: 933. https://doi.org/10.3390/jof7110933.

Google Scholar