



A new species of *Russula* (Russulales) from Eastern Himalaya, India

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Abstract

A new species of *Russula* (*Russulaceae*, *Basidiomycota*) is described from Darjeeling Hill, Eastern Himalaya, India. Morphological and molecular (nuclear ribosomal internal transcribed spacer region) sequence data assign the present species to the subgen. *Incrustatula* Romagn., sect. *Lilaceinae* (Melzer & Zvára) Konrad & Joss. and subsect. *Lilaceinae* Melzer & Zvára. Comprehensive description, photographs and comparisons with morphologically similar and phylogenetically related species are provided.

Key words: macrofungi, nrDNA, taxonomy, West Bengal

Introduction

The Eastern Himalayas, encompassing the Darjeeling hills of West Bengal, North East India, Sikkim and South East Tibet in China, Bhutan, and Northern Myanmar, covers an area of 524,190 km² (21.95°–29.45°N and 82.70°–100.31°E) within the arctic, sub-arctic, temperate, subtropical, and warm tropical climatic zones (Chettri *et al.* 2010, Das & Chattopadhyay 2013). *Shorea robusta* C.F.Gaertn. (*Dipterocarpaceae*) forests and evergreen trees predominate all along the foothills, while subtropical forests cover the hills up to an elev. of about 2000 m. The temperate mixed forests are found up to a height of about 3,000 m followed by the alpine forests (4,000 m and 5,300 m). Apart from various species of *Rhododendron* (*R. arboreum* Sm. being most common), different ectomycorrhizal trees like *Abies densa* Griff., *Acer campbellii* Hook.f. & Thomson ex Hiern, *Betula alnoides* Buch.-Ham., *Betula cylindrostachys* Wall. ex Diels, *Tsuga dumosa* Eichl., *Quercus fenestrata* Roxb., *Q. lamellose* Sm., *Q. pachyphylla* Kurz, *Castanopsis* sp., dominates in the Darjeeling hills of west Bengal (Chatterjee *et al.* 2006, Das *et al.* 2014). During pre-monsoon (April–May) and monsoon (May–early October), these ectomycorrhizal plants facilitate the fruiting of many ectomycorrhizal basidiomycetes, among which the members of *Russula* Pers. are very common.

Russula is considered to be one of the most abundant and widely distributed ectomycorrhizal agaric genera (Buyck & Horak 1999, Buyck *et al.* 2008). Although the diversity of the genus has regularly been explored in different parts of Sikkim in the Eastern Himalayan range in subsequent years (Das 2010, Das *et al.* 2010), little attention has been paid to the *Russula* in the Darjeeling hills of West Bengal. Sir J.D. Hooker was the pioneer to make macrofungal collections from Darjeeling hills, which led to the publication of a series of articles by Revd M.J. Berkeley between 1850 and 1882 (Thatoi & Singdevsachan 2014). A thorough literature survey reveals that, at present, *Russula* is represented by ca. 133 species from India (Das *et al.* 2014, Dutta *et al.* 2015), among which the subgen. *Incrustatula* includes only thirteen taxa (Das & Sharma 2005, Das *et al.* 2013, Kumar *et al.* 2014).

In this contribution we present the description of an interesting *Russula* species, collected from the Darjeeling hills of West Bengal. This present paper represents a step towards developing a comprehensive database of macrofungal diversity in India, specifically the status of the family *Russulaceae* in the Darjeeling Hills.