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The genus *Tremella* (Tremellales, Basidiomycota) in Russia with description of two new species and proposal of one nomenclatural combination

VERA F. MALYSHEVA[1], EKATERINA F. MALYSHEVA[1] & EUGENIA M. BULAKH[2]
[1] *Komarov Botanical Institute of the Russian Academy of Sciences, Prof. Popov St. 2, RUS-197376, Saint-Petersburg, Russia*
Corresponding author: v_malysheva@binran.ru
[2]*Institute of Biology & Soil Science, Far East Branch of the Russian Academy of Sciences, 100-letiya Vladivostoka Prospect 159, Vladivostok, RUS-690022, Russia*
E-mail: bulakh@ibss.dvo.ru

Abstract

Twenty-two non-lichenicolous species of *Tremella* are reported from Russia. Detailed descriptions, photographs, illustrations and a dichotomous key for the identification of taxa are provided. Two species, *Tremella subalpina* and *T. griseola*, are described as new. One new combination is proposed, and an epitype for *Tremella yokohamensis* is designated. Molecular phylogenetic reconstructions are presented based on nrITS and nrLSU regions in Bayesian and likelihood analyses. Phylogenetic data were strongly correlated with morphological data and were useful to delimit closely related species.

Key words: heterobasidiomycetes, morphology, taxonomy, phylogeny, nrITS, nrLSU, epitypification

Introduction

This paper continues the publications on heterobasidiomycetes from Russia (Malysheva 2012, Malysheva 2013, Malysheva & Bulakh 2014). Since the beginning of the twentieth century the taxonomic studies of *Tremella* have been carried out around the world (Lloyd 1908–1925, Bourdot & Galzin 1923, 1928, Kobayasi 1939, Martin 1945, Bandoni 1987, Lowy 1971, Chen 1998). Presently, according to the Index Fungorum database (www.indexfungorum.org) the *Tremella* is composed of more than 300 species. Recent molecular studies revealed that this genus seems to be polyphyletic and splits into several monophyletic subgroups containing anamorphic yeast species, e. g. *Cryptococcus* and *Bullera* (Boekhout *et al.* 2011, Millanes *et al.* 2011, Weiss *et al.* 2014), but for the final conclusion about taxonomic boundaries of the genus further investigations are needed. The genus is morphologically diverse and includes, among species with conspicuous basidiocarps, others that completely lack basidiocarps and grow in the hymenium of other fungi as well as associated with lichens.

Among the heterobasidiomycetes distributed in the territory of Russia, the genus *Tremella* is characterised by its relative diversity with some rather widespread species. However, the species richness of *Tremella* in Russia is still poorly known. The present study was focused on non-lichenicolous *Tremella* species. Before our investigation, only nine species of non-lichenicolous *Tremella* were known from Russia (Raitviir 1967, Govorova 1997, Malysheva 2010). Furthermore, no revision had been undertaken of specimens confirming the records.

In this paper we expand the knowledge of *Tremella* in Russia based on morphological studies and molecular genetic data. Two new species were described and four additional species were found as a result of recent expeditions. Specimens collected throughout the country (from the European part to the Far East) and kept in several Mycological Herbaria (LE, VLA-M and TAAM) have been examined in our investigation.

Materials & Methods

Morphological analysis

Macromorphological descriptions are based on fresh specimens, herbarium collections from the mycological Herbarium

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