



Lactarius cucurbitoides (Russulales, Basidiomycota), a new species from South Korea supported by molecular and morphological data

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Abstract

A new species belonging to *Lactarius* subg. *Plinthogalus* was discovered during a long-term project on the diversity of Korean *Lactarius*. This species is proposed here as *Lactarius cucurbitoides*. The status of *L. cucurbitoides* as a new species is supported by molecular data and morphological features. Phylogenetic analysis based on internal transcribed spacer (ITS) sequences shows that *L. cucurbitoides* is closely related to *L. subplinthogalus*, *L. friabilis*, and *L. oomsisiensis*, with pairwise distances of 2.8–4.3%. Morphological characters of *L. cucurbitoides* that distinguish it from these closely related species are a pale yellow to pale orange colored pileus and non-discoloration of white latex. The new species is described and illustrated in the present paper.

Key words: ectomycorrhizal fungi, Korea barcode of life, taxonomy, white latex, sp. nov.

Introduction

The genus *Lactarius* Pers., also known as “milkcaps” for its production of latex, is a group of ectomycorrhizal fungi with an estimated 500 species worldwide (Le *et al.* 2007). Recent molecular analyses show that the milkcaps do not form a monophyletic group. A new genus, *Multifurca*, was raised by Buyck & V. Hofstetter (also including some former *Russula* species), and *Lactarius* was divided into two genera—*Lactarius* sensu novo and *Lactifluus* (Pers.) Roussel (Buyck *et al.* 2010, Verbeken *et al.* 2011, Stubbe *et al.* 2012, Verbeken *et al.* 2012). The total number of described species belonging to *Lactarius* sensu stricto accounts for 75–80% of the currently described species (Buyck *et al.* 2010, Verbeken & Nuytinck 2013).

Lactarius subg. *Plinthogalus* (Burl.) Hesler & A.H. Sm. was first considered a separate genus *Lactariella* (Schröter 1889), then Burlingham made it a group “*Plinthogalae*” in the genus *Lactarius* (Burlingham 1908). *Lactarius* subgenus *Plinthogalus* (Berk.) Hesler & A. H. Sm. sensu lato has been defined by its distinct appearance including greyish or brownish pigments, velvety aspect of pileus and stipe, and heavily ornamented basidiospores. The group was elevated to the level of section by Singer (1942) and to subgenus by Hesler & Smith (1979). Recently, Verbeken added several sections to this group (Verbeken 2000).

Species in this subgenus are characterized by a grey or brown-colored pileus, stipe with a typical velvety and dry texture, striking color change of the white latex when exposed to air, and heavily ornamented and reticulate spores (Le *et al.* 2007, Stubbe *et al.* 2007). In addition to these striking morphological characters, *L.* subg. *Plinthogalus* is well supported by molecular data (Eberhardt & Verbeken 2004, Le *et al.* 2007, Buyck *et al.* 2008, Stubbe *et al.* 2012).

The subgenus is rather well-studied in Europe and North America, but studies in Asia have been limited. Many new species of this particular group have been reported in Asia in recent years. Das & Sharma (2004) initially extended our knowledge by including a new Indian species. Subsequently, six new species were reported from Thailand (Le *et al.* 2007), eleven new species were identified in Malaysia (Stubbe *et al.* 2007, Stubbe *et al.* 2008), and two new species were reported from India (Das & Verbeken 2012).

In Korea, 52 *Lactarius* species have been reported to date (Kim *et al.* 2013). This inventory has been taken based on comparisons of macromorphology to European and North American *Lactarius* species. However, morphological

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