Chlorophyllum lusitanicum

G. Moreno, Mohedano, Manjón, Carlavilla & Altés, sp. nov.

Eymology. From Lusitania (ancient Iberian Roman province including the southern part of Portugal and mainly the autonomous community of Extremadura in the west of Spain), the geographic area where this species has been collected.

Classification — Agaricaeae, Agaricales, Agaricomycetes.

Epigeous basidiomata 1.5–3.5 × 1.2–3.4 cm (measurements taken from herbarium material), irregularly globose or subglobose, rarely obovoid, not lobed, white with light pink tones when young and after friction, but dark brown at maturity. Peridium smooth, breaking into polygonal patches at maturity (similar to Lycoperdon utriforme), c. 0.2–0.5 mm thick, formed by cylindrical, septate, thin-walled, smooth hyphae lacking incrustations, 4–8 µm diam, clamp connections not seen. Stipe absent or rudimentary with a thick whitish mycelial cord. Columeila well-developed, reaching half to the fruiting body, up to 1 cm wide, and whitish in colour. Gleba whitish to pale yellowish, frequently presenting small cavities and with a scaly appearance in herbarium material, breaking easily. Basidia 35–43 × 15–18 µm, clavate to broadly ellipsoid, with 1–4 sterigmata, variable in length, c. 8–16 × 1.4–2 µm, forming a true hyaline hymenium. Clamp connections rarely observed at the base of the basidia and basidioles. Basidiospores globose to subglobose, more rarely ovoid to ellipsoid (abnormal spores frequently illustrated in gastroid fungi also seen), 10–14(–15) × 10–13(–14) µm, (L/W = 1.0–1.08), germ pore absent, hyaline, smooth, dextrinoïd, with a large lipid droplet and hilar appendix, 2–3(–5) × 1.5–2 µm. Smell and taste not recorded.


Notes — Chlorophyllum lusitanicum is characterised by the globose to subglobose basidiomata, whitish to pink hues when young, whitish short columella, reaching a maximum of half of the fruiting body, gleba white to yellowish white at maturity, globose to subglobose spores, 10–14(–15) × 10–13(–14) µm, hyaline, smooth and dextrinoïd, with few clamps at the base of the basidia and basidioles.

The position and composition of Macropleiota within the Agaricaeae and its phylogenetic relationships with other members of the family were investigated, using both molecular (ITS and LSU rDNA sequences) and morphological characters. The molecular data separate the genus into two clades Macropleiota and Chlorophyllum (Vellinga et al. 2003). The secotioid genus Endoptychum typified by E. agaricoides, must belong to Chlorophyllum as C. agaricoides (Vellinga 2002, 2003). However, the phylogenetic position of Endoptychum arzonicum is unresolved, being sister to Agaricus and Chlorophyllum (Vellinga 2002, Lebel & Smye 2012).

Chlorophyllum agaricoides is a species close to C. lusitanicum, but differs by its stipticate to percurrent basidiomata, well-developed columella, dark brown gleba at maturity, and greenish to yellowish brown, ellipsoid spores, not larger than 10 µm long (Moreno et al. 2007).

Chlorophyllum arzonicum (Shear & Griffiths) G. Moreno & Altés, comb. nov. — MB814884


Notes — Chlorophyllum arzonicum is a similar species, differing by its smaller basidiomata, 1–1.3 cm diam in our collections, 2–4 × 1.5–3 cm diam in the original description (Shear 1902), with not fully developed columella, smaller spores, 7–12 µm diam and growing in xerophilous areas. A morphological study of the Arizona type material and other collections of desert areas from USA and Mexico (Hermosillo, San Luis Potosí, Sonora) was conducted by Moreno et al. (2007).

Other species described as Endoptychum have affinities with Agaricus and they have been transferred to that genus, for example, Endoptychum depressus (= Agaricus inapertus; Vellinga et al. 2003). Similarly, the Australian species as Endoptychum melanosporum, E. moongum and E. variolata are also morphologically related to Agaricus (Lebel & Smye 2012).

The phylogenetic tree was based on a maximum likelihood (ML) analysis of ITS and LSU sequences with the program MEGA v. 6.05. Lopiptora cristata was used as outgroup. Bootstrap support values ≥ 75 % are given above the branches (for phylogenetic tree, see MycoBank).