



***Floccularia luteovirens*, a new edible mushroom record for Turkish Mycobiota**

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Abstract

The edible mushroom *Floccularia luteovirens* (Alb. & Schwein.) Pouzar, is reported as a new record for the mycobiota of Türkiye, based on the identification of the samples collected from Bolu province. It is the first member of the genus *Floccularia* Pouzar in Türkiye. A brief description of the species is provided together with the suggested Turkish name and the photographs, related to the macroscopy and microscopy.

Key words: Biodiversity, Agaricales, IUCN, New record

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***Floccularia luteovirens*, Türkiye Mikobiyotası için yeni bir yenilebilir mantar kaydı**

Özet

Yenilebilir bir mantar olan *Floccularia luteovirens* (Alb. & Schwein.) Pouzar, Bolu'dan toplanan örneklerin teşhis edilmesiyle, Türkiye mikobiyotası için yeni kayıt olarak verilmiştir. Bu tür, *Floccularia* Pouzar cinsinin Türkiye'deki ilk üyesidir. Türün kısa bir betimlemesi, önerilen Türkçe ismi ve makroskopi ve mikroskobisine ilişkin fotoğraflarıyla birlikte verilmiştir.

Anahtar kelimeler: Biyoçeşitlilik, Agaricales, IUCN, Yeni kayıt

1. Introduction

Floccularia Pouzar is a genus in the order Agaricales. The members of the genus are mainly characterized by tricholomatoid to agaricoid, pyramidal scaly fruting bodies; adnate to adnexed or slightly emarginate, crowded lamellae; cylindrical to clavate stipe, differing above and below white to yellow ring zone; ellipsoid to broadly ovoid, smooth, hyaline and amyloid basidiospores without germ pore. Though they feature *Tricholoma*-like stature, the amyloid basidiospores differ them from *Tricholoma* species. Since the genus has not been subjected to contemporary, DNA-based study, as a whole, the position of *Floccularia* within the Agaricales order has not been reliably determined yet [1,2].

Though 15 members of *Floccularia* had been recorded worldwide, at species or infraspecific level, IndexFungorum lists four conformed *Floccularia* species (*F. albolanaripes* (G.F. Atk.) Redhead, *F. fusca* (Mitchel & A.H. Sm.) Bon, *F. luteovirens* (Alb. & Schwein.) Pouzar, *F. pitkinensis* (Mitchel & A.H. Sm.) Bon). Almost 2700 macrofungi species have so far been reported from Türkiye. But, the current checklists [3,4] and the latest contributions [5-9] indicate that none of them were reported from Türkiye before. Here we present the edible species *F. luteovirens* as a new record for the mycobiota of Türkiye, based on the identification of the samples collected from Bolu province. The study aims to make a contribution to the mycobiota of Türkiye.

2. Materials and methods

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Fruit bodies of *Floccularia luteovirens* were collected from Abant Lake Nature Park (Mudurnu-Bolu) in 2023, during a field trip. Fruit bodies were photographed at the collection site, and necessary notes related to its ecology and morphology were taken. Microscopic investigations were carried out under a Leica DM1000 trinocular compound microscope, equipped with a EC3 camera and LasEZ application software. The sections were obtained from dried material, and mounted in water, Congo red and Lactophenol cotton blue. The sample was identified by comparing the accumulated data with Kuo [1], Smith and Walters [10], Pilát [11], Wollweber [12], Mitchel and Smith [13], McKnight and McKnight [14], Kuo and Methven [15], Roberts and Evans [16] and Malik et al. [17].

The specimen is kept at Karamanoğlu Mehmetbey University, Science Faculty, Department of Biology.

3. Results

Fungi R.T. Moore

Basidiomycota R.T. Moore

Agaricales Underw.

Floccularia luteovirens (Alb. & Schwein.) Pouzar, *Česká Mykol.* 11(1): 50 (1957)

Syn: [*Agaricus luteovirens* Alb. & Schwein., *Agaricus stramineus* Krombh., *Amanita luteovirens* (Alb. & Schwein.) M.M. Moser, *Armillaria luteovirens* (Alb. & Schwein.) Sacc., *Armillaria luteovirens* f. *alba* A.H. Sm., *Armillaria luteovirens* var. *americana* (Mitchel & A.H. Sm.) Bon, *Armillaria straminea* P. Kumm., *Armillaria straminea* f. *alba* (A.H. Sm.) Mitchel & A.H. Sm., *Armillaria straminea* var. *americana* Mitchel & A.H. Sm., *Cortinellus luteovirens* (Alb. & Schwein.) P. Karst., *Floccularia luteovirens* f. *alba* (A.H. Sm.) Pilát, *Floccularia straminea* (P. Kumm.) Pouzar, *Floccularia straminea* f. *Alba* (A.H. Sm.) Bon, *Floccularia straminea* var. *americana* (Mitchel & A.H. Sm.) Bon, *Gyrophila luteovirens* (Alb. & Schwein.) Quél., *Mastoleucomyces luteovirens* (Alb. & Schwein.) Kuntze, *Tricholoma luteovirens* (Alb. & Schwein.) Ricken]

Macroscopic and microscopic features

Cap 40-70 mm in diameter, at first hemispherical to pulvinate, convex to spreading or almost flat at maturity. Surface fibrous-scaly to squamosa with flat scales when young, somewhat glabrescent in extreme age, white or slightly dull-white with sulphur-yellow coloration at marginal zone. Margin incurved at first and scaly from veil remnants. Flesh white. Odor and taste not distinctive. Lamellae moderately broad, adnate or notched around apex of stipe; edges even to irregularly torn at maturity; white to inconspicuously yellowish. Stipe 35-70 × 9-18 mm, central, cylindrical, slightly enlarged towards the base, white, annulus submembranous, smooth above the annulus while covered with protruding scales below (Fig.1). Spore print white.



Figure 1. Basidiocarps of *Floccularia luteovirens*

Basidia 22-27.5 × 4-7 μm, clavate with four sterigmata. Basidiospores (5.7)6.4-7.3(7.6) × (4.2)4.3-4.8(5.3) μm, ellipsoid, with oblique apiculus (Fig. 2), and smooth colorless, distinctly amyloid membrane.

Habitat: *Floccularia luteovirens* was reported to grow in deciduous forests, conifer forests or on grassland or alpine meadows as scattered or in groups [14, 17-18].

Specimen examined: Bolu, Mudurnu, Abant Lake Nature Park, sequentially in meadow, surrounded with *Abies* and *Pinus* spp., 40.603308N, 31.265675E, 1.400 m, 11/06/ 2023, YKaraduman 1.

Turkish name: Suggested Turkish name for the presented species is “Sarılı Kırpık”.

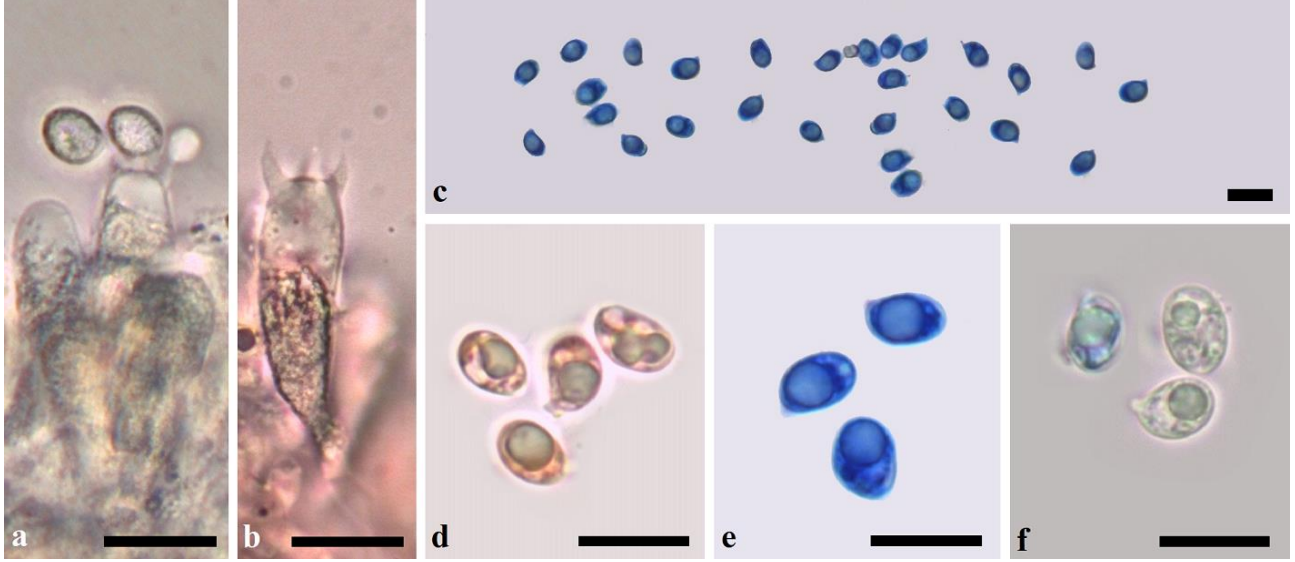


Figure 2. Basidia (a,b) and basidiospores (c-f) of *Floccularia luteovirens* (bars-10 µm) (a in KOH; b,d in Congo-Red; c,e in Lactophenol cotton blue; f in water)

4. Conclusions and discussion

Floccularia luteovirens was added as a new record for the mycobiota of Türkiye. This species is the first member of the genus *Floccularia* in Türkiye. The characteristics of the examined collection generally match with the description given by Smith and Walters [10], Pilát [11], Wollweber [12], McKnight and McKnight [14], Kuo and Methven [15], Roberts and Evans [16] and Malik et al. [17]. Though basidia lengths are given by Malik et al. [17] as “18.26-22.4 × 3.32-6.64 µm”, we measured them as “22-27.5 × 4-7 µm”. The altitude of our collection locality is another difference. Current published data indicate that this fungus has so far been collected from the altitudes ranging mainly between 2600 and 4800 meters [2,17-18]. The examined sample were collected at an altitude of 1.400 meters, which is relatively lower compared to the common altitudes. But Wollweber [12] and Melis et al. [19] reports much more lower altitudes of 230-300 and 30 meters respectively.

Floccularia luteovirens is a rare edible mushroom [20]. It has been valued in Asia as an important medicinal and ecological species with the name “golden mushroom” [21]. The consumption of this fungus was also reported from Mexico with the names “hongo de yema”, “canario” and “hamburguesa” [22]. Though it is known from Austria, China, Czech Republic, Germany, Italy, Netherland, Romania, Slovakia and USA, it was included in the red list of species to protect in some countries mainly as critically endangered (CR) [19, 23-25].

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