

Tuber buendiae



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***Tuber buendiae* Ant. Rodr. & Morte, sp. nov.**

Etymology. Named after Encarnación Buendía, wife of the first author, who has been assisting in the collection of *Tuber* specimens, and is the collector of the type specimen.

Classification — *Tuberaceae*, *Pezizales*, *Pezizomycetes*.

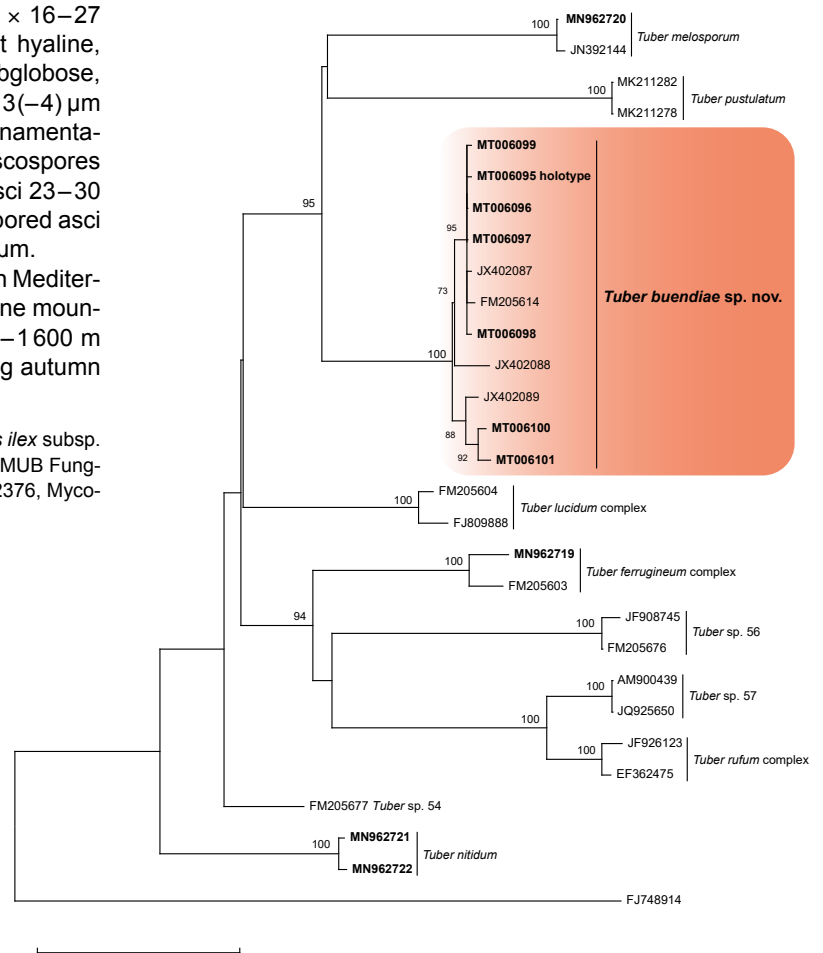
Ascomata hypogeous, 1–3 cm, subglobose or irregular in form, sometimes lobed, sometimes with a basal depression, fissured in age, yellow brown to reddish brown, minutely warted with pyramidal, flattened warts. **Peridium** 400–500 µm thick, composed of hyaline, agglutinated, interwoven hyphae (intricate texture), becoming pseudoparenchymatous towards the surface and forming pigmented, subangular, thick-walled cells, in a superficial layer 40–70 µm thick. **Gleba** firm, solid, whitish at first, becoming light-brown, dark-brown or red-brown at maturity, marbled with numerous, branching, white and dark veins. **Odour** pleasant. **Asci** inamyloid, 60–90 × 40–60 µm excluding stalk, pyriform to clavate or subglobose, with a long or short stalk arising from a crozier, 20–50 µm long, walls 1–2 µm thick, 1–4(–5)-spored. **Ascospores** 18–38 × 16–27 µm, Q = 1.1–1.5, excluding ornamentation, at first hyaline, yellowish brown at maturity, ellipsoid to ovoid or subglobose, ornamented with short spines, sometimes curved, 2–3(–4) µm long, often connected by lower ridges, making the ornamentation an irregular and incomplete spiny reticulum. Ascospores from 1-spored asci 33–38 × 23–27 µm, 2-spored asci 23–30 × 18–25 µm, 3-spored asci 21–28 × 16–22 µm, 4-spored asci 20–28 × 17–21 µm, 5-spored asci 18–22 × 16–17 µm.

Ecology & Distribution — *Tuber buendiae* grows in Mediterranean *Quercus ilex* subsp. *ballota* forest, in limestone mountains of the southeast of the Iberian Peninsula, 900–1 600 m altitude. The species occurs all year; maturing during autumn and winter.

Typus. SPAIN, Albacete, Alcaraz, in calcareous soil, in *Quercus ilex* subsp. *ballota* forest (*Fagaceae*), 31 Dec. 2016, E. Buendía (holotype MUB Fung-974; ITS and LSU sequences GenBank MT006095 and MT102376, MycoBank MB834191).

Additional materials examined. SPAIN, Albacete, Masegoso, in *Quercus ilex* subsp. *ballota* forest, 9 Oct. 2012, A. Rodríguez, MUB Fung-978; ITS sequence GenBank MT006099; Riópar, 18 Oct. 2012, A. Rodríguez, MUB Fung-975; ITS sequence GenBank MT006096; Villaverde de Guadalimar, 21 Nov. 2016, A. Rodríguez, MUB Fung-976; ITS sequence GenBank MT006097; Vianos, 3 Dec. 2016, A. Rodríguez, MUB Fung-980; ITS sequence GenBank MT006101; Alcaraz, 18 Nov. 2016, E. Buendía, MUB Fung-977; ITS sequence GenBank MT006098; *ibid.*, 20 Nov. 2017, E. Buendía, MUB Fung-979; ITS sequence GenBank MT006100.

Notes — *Tuber buendiae* is a reddish brown truffle that clusters in the rufum clade, and is characterised by its minutely warted peridium, brown gleba marbled with white and dark veins and spiny-reticulate spores. Healy et al. (2016) previously identified it as a hypothetical undescribed species *Tuber* sp. 83. *Tuber buendiae* resembles *Tuber pustulatum*, but in addition to genetic differences, it differs from *T. pustulatum* (Leonardi et al. 2019), by having a pleasant odour, a gleba with numerous veins and spores with shorter spines.



^{0.10} Maximum likelihood (ML) phylogenetic tree of *T. rufum* clade inferred from ITS sequences, using RAXML-HPC v. 8 (Stamatakis 2014) on XSEDE in the CIPRES science gateway (Miller et al. 2010). GTR + G selected as model of evolution for analysis. The sequences obtained in the present study are highlighted in **bold**. Bootstrap support values ($\geq 70\%$) are indicated at the nodes. *Tuber spinoreticulatum* (GenBank FJ748914) was used as outgroup. The scale bar indicates the expected changes per site. Species hypotheses for undescribed species (*Tuber* sp. followed by numbers) follow the conventions of Bonito et al. (2010).

Colour illustrations. Spain, Alcaraz mountain range (Albacete), Mediterranean *Quercus ilex* subsp. *ballota* forest. The collector and her truffle-hunting dog at the collection site; ascocarps; mature ascospores. Scale bar = 20 µm.

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