New Iberian discovery of *Lotinia verna* (*Pezizales*)

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Ascomycete.org, 10 (6) : 259–262
Mise en ligne le 30/12/2018
10.25664/ART-0249

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Abstract: *Lotinia verna* is a particular cup-fungus, macroscopically close to the *Trichophaea* s.l., recently discovered in the Basque country. Its generic features placed it in the *Pyronemataceae*, precisely in the *Scutellinia-Trichophaea* lineage. The discovery of a new locality in the southern part of the Iberian Peninsula gave the opportunity to complete the original description by observation of new characters and new illustrations.
Keywords: Ascomycota, Jardín Botánico-Histórico La Concepción de Málaga, *Pyronemataceae*, taxonomy.

Résumé : *Lotinia verna* est un discomycète particulier, macroscopiquement proche des *Trichophaea* s.l., récemment découvert au Pays Basque. Ses caractères génériques le place dans les *Pyronemataceae*, précisément dans la lignée *Scutellinia-Trichophaea*. La découverte d'une nouvelle localité dans la partie sud de la péninsule ibérique a donné l'opportunité de compléter la description originale par l'observation de nouveaux caractères et par de nouvelles illustrations.
Mots-clés : Ascomycota, Jardín Botánico-Histórico La Concepción de Málaga, *Pyronemataceae*, taxinomie.

Introduction

During a field trip to the Botanical Garden of Málaga in January 2017 one of us (MV) had the opportunity to discover the recent and rare discomycete *Lotinia verna* Pérez-Butrón, Fernández-Vicente & P. Alvarado. This species had been discovered in early 2000s in the Basque Country, in the province of Bizkaia, but published only recently (Pérez-Butrón *et al*., 2015). This collection gives us the opportunity to complete the original description with some new characters and to extend its known distribution and phenology.

Materials and methods

Observations were made on fresh and dried material using the methods of "vital taxonomy" (Baral, 1992). The following mounts were used to observe microscopic characters: tap water, Cotton Blue (CB) in lactophenol, and Lugol's solution (IKI) to test the amyloid reaction. Measurements were made on 30 free ascospores and from spore-prints, mounted in water, under the 100× oil immersion lens of transmission light microscopes. "X" represents the average value of ascospore dimensions, and "Q" the ratio between ascospore length and width. Macrographs were made in situ using a digital camera, while micrographs were taken using a digital camera mounted directly on a microscope. Line drawings were made freehand to scale.

Taxonomy

Lotinia verna Pérez-Butrón, Fernández-Vicente & P. Alvarado, *Persoonia*, 35: 325 (2015).

Apothecia 1–2.5 mm diam., gregarious, often packed, sessile, discoid, with a chestnut brown hymenium, more or less plane or slightly depressed in the middle; external surface subconcolorous, covered with superficial dark brown hairs, partly appressed, more dense in the basal part. **Margin** with hairs.

Excipulum heterogeneous, made of a *textura subglobulosa/angularis*, with hyaline cells, 11–30 µm wide, mixed with some more elongated hyphae, 26–40 × 9–10 µm, becoming a *textura prismatica* in the outer part where the hairs arise. **Excipular hairs** 350–500 × 4–8 (10) µm, brown, straight or flexuous, narrow on the whole length, sharp or obtuse, often forked in the upper third, junction always rounded, with a single base, rarely with a second root, septate, 1–1.5 µm thick-walled. **Marginal hairs** similar, but generally becoming gradually enlarged towards the base. **Asci** 350–450 × 18–32 µm, cylindrical, without crozier, 8-spored, operculate, inamyloid. **Paraphyses** dense, cylindrical, straight, septate, not or only slightly enlarged at the top, apical cell 30–50 × 5–7 µm, obtuse or sometimes almost sharp, hyaline, containing some vacuole bodies, with an encrusting brown pigment present at the top but easily teared out. **Ascospores** broadly ellipsoid, (20) 22–27 × (15) 16–19 (20) µm [X=23.9 × 17.6 µm], Q=1.3–1.5, Qm=1.4, hyaline, eguttulate, thick-walled, smooth, uninucleate (Ø 4–5 µm), with a sheath around young ascospores, uniseriate.

Studied material: Spain, Andalusia, Málaga, Jardín Botánico-Histórico La Concepción de Málaga, 36°45'59.2" N 4°25'30.3" W, alt. 95 m, on soil, in a rut on a path, *leg*. M. Vega, 3 Jan. 2017, pers. herb. MV20170103-10 and N.V. 2017.01.01.

Discussion

The discovery of a recently published species is always an exciting moment. The specific characters of *Lotinia verna* allow an easy determination, although, macroscopically, it could be assigned to a *Trichophaea* s.l. species. Microscopically, we can note some affinities with the genera *Trichophaeopsis* Korf & Erb because of its superficial hairs and with *Paratrichophaea* Trigaux because of the ascospore morphology (Bronckers, 2003; Van Vooren *et al*., 2005). It also shares an outer excipulum of *textura prismatica* with these two genera. Contrary to the original description which indicates that asci are pleurorynchous, we did not see any croziers at the ascus bases. Similarly, the asci shown in the microscopic sketch (Pérez-Butrón *et al*., 2015) are clearly drawn without croziers. This feature can be considered as important because it is unusual in *Trichophaea s.l*. We also noted the presence of a sheath around young ascospores, not observed by the authors. It is interesting to note that such a character is also known in *Paratricharina poiraultii* (Boud.) Van Vooren, U. Lindemann, M. Vega, Ribes, Illescas & Matočec (Van Vooren *et al*., 2015), another species of the *Scutellinia-Trichophaea* lineage, though we have not seen that in *Trichophaea* species. Finally, we detected that ascospores are uninucleate, an observation made without using a staining reagent; this feature had not been stated in the original description though it was shown in the corresponding sketch.

Phylogenetically the species occupies an isolated position in the family *Pyronemataceae* as shown in the Bayesian consensus tree available in MycoBank database (MB#814903), more precisely in the *Scutellinia-Trichophaea* lineage (Hansen *et al*., 2013), which justifies the publication of the new genus *Lotinia*. Van Vooren *et al*. (2017) confirmed this position based on a consensus phylogram of analysis

of ITS alignment of *Tricharina* and related species, with *Wilcoxina* Chin S. Yang & Korf as the closest genus.

Our collection was made earlier in the year than those by the original authors, Málaga being located at a lower latitude than the Basque country it can be assumed the species is not strictly vernal and can grow during winter if the meteorological conditions are convenient.

Finally we have to cite another Spanish collection presented on the Internet forum Ascofrance (http://ascofrance.com/forum/ 27977/pseudombrophila), which fits with the characters of *Lotinia verna*, except for the ascospore ornamentation that shows "low warts and crests" in cotton blue. We believe that this ornamentation could be an artefact due to the spore sheath. An ascus base is also shown with a crozier, so the variability of this character is questionable.

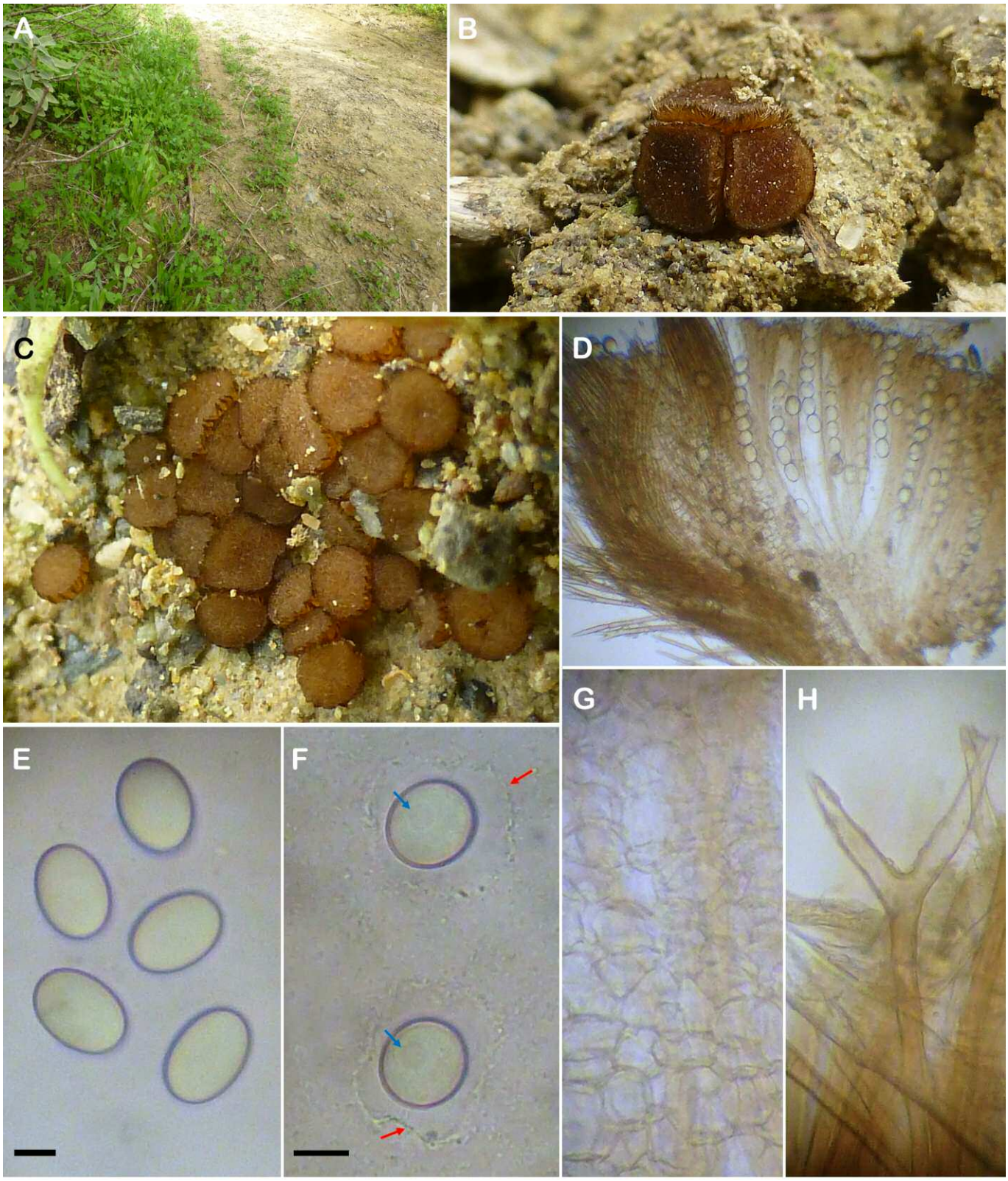

Plate 1 – *Lotinia verna*. A. Locality of the collection. B-C. General aspect. D. Vertical section of apothecium. E. Mature ascospores. F. Young ascospores showing a sheath (red arrows) and nucleus (blue arrows). G. Outer part of the ectal excipulum. H. Top of a forked hair. Scale bars = 10 µm. All microphotographs in water. Photos: M. Vega.

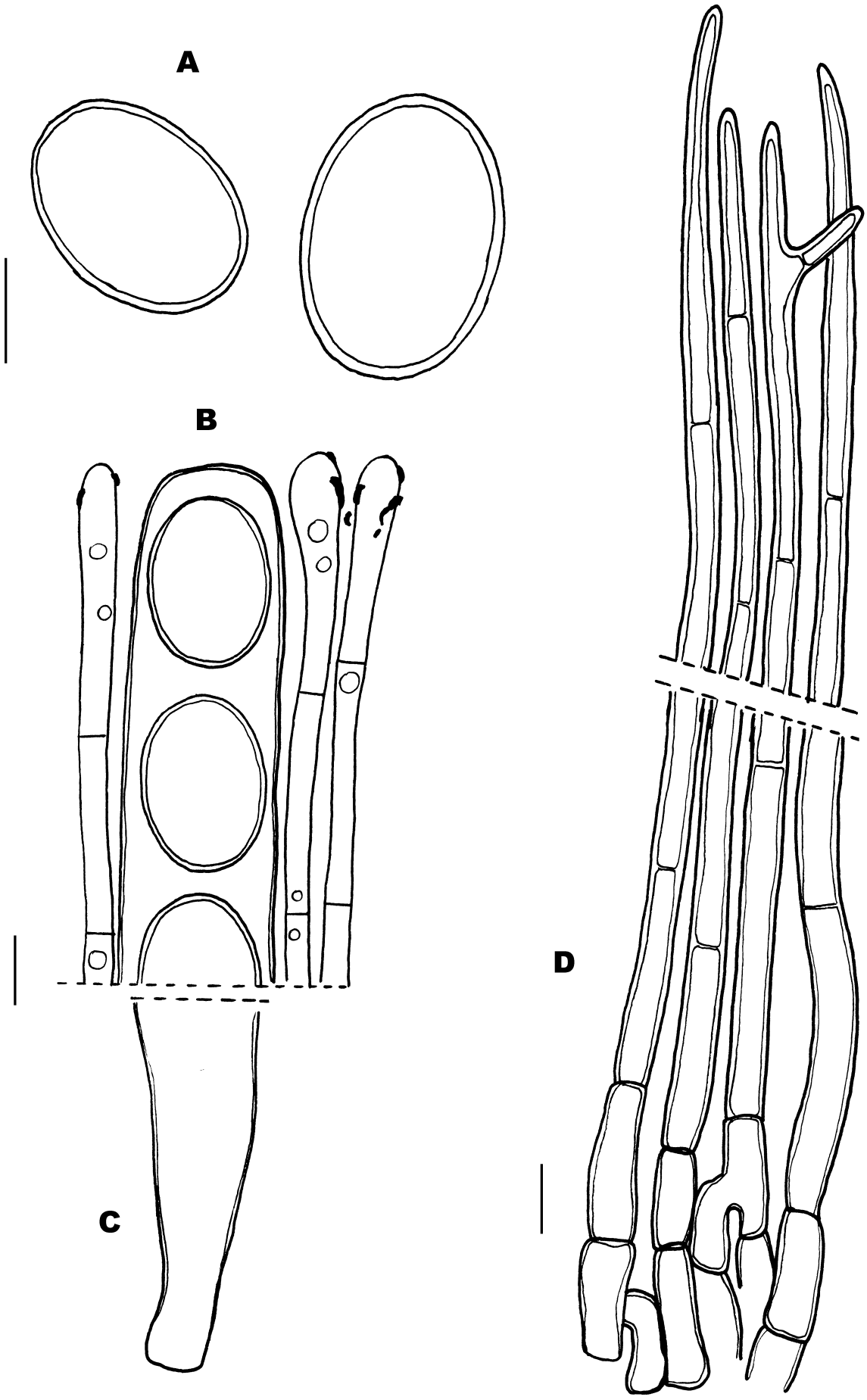

Plate 2 – *Lotinia verna*. A. Ascospores. B. Top of ascus and paraphyses. C. Base of ascus. D. External hairs. Scale bars = 10 µm. All items in water. Drawing: N. Van Vooren.

Acknowledgements

We thank Caroline Hobart for the pre-submission review of the manuscript.

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