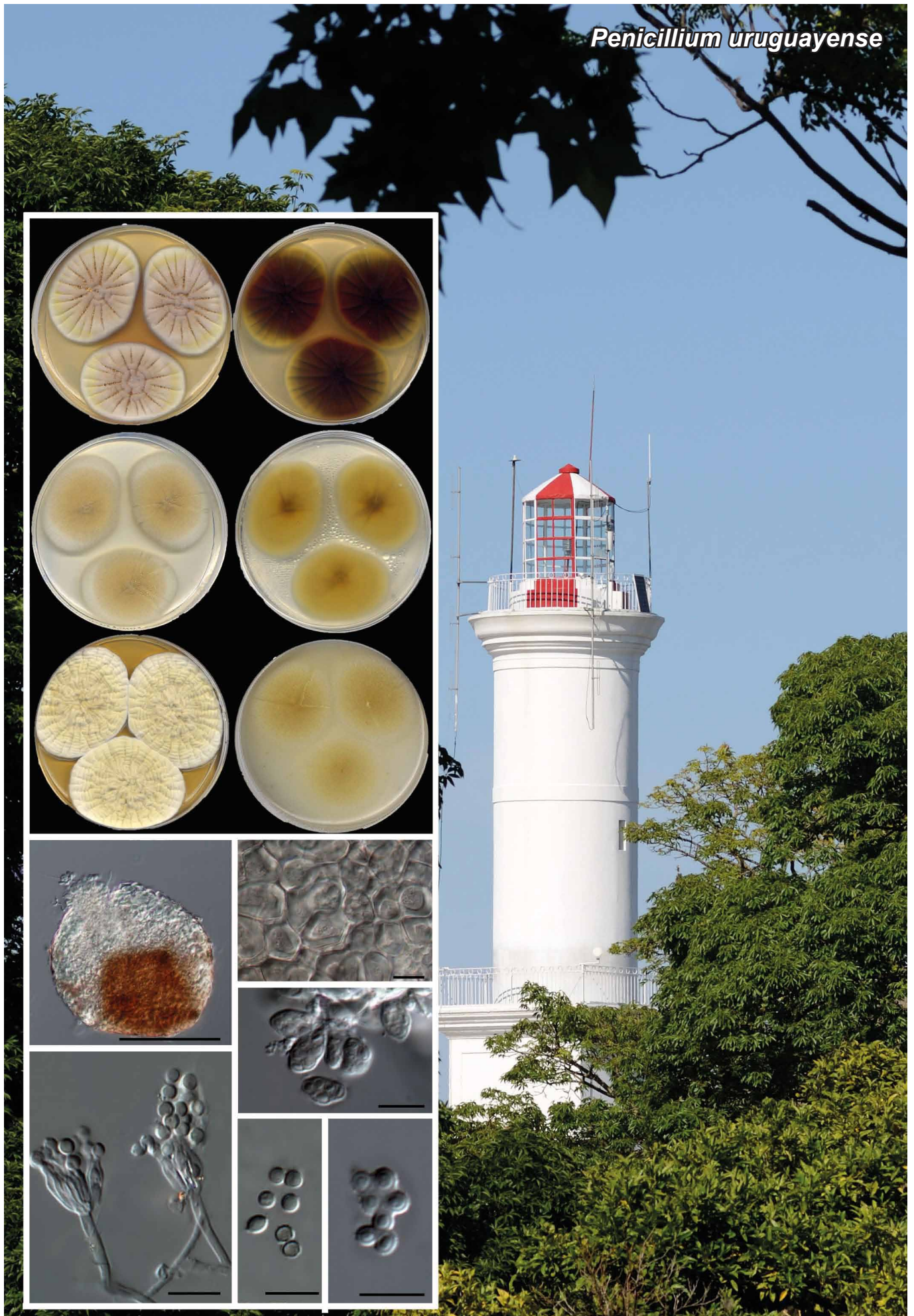


Penicillium uruguayense



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Penicillium uruguayense Guevara-Suarez, Dania García, Cano & Gené, *sp. nov.*

Etymology. Name refers to Uruguay, where the fungus was isolated.

Classification — *Aspergillaceae*, *Eurotiales*, *Eurotiomycetidae*, *Eurotiomycetes*.

Colony diam in 7 d (mm) — On CYA: 25 °C 48–50, 30 °C 54–56, 37 °C 39–50; on MEA: 25 °C 44–47, 30 °C 50–52, 37 °C 42–45; on YES: 25 °C 53–55, 30 °C 54–56; 37 °C 50–53; on OA: 25 °C 40–45, 30 °C 50–60, 37 °C 40–45; on DG18: 25 °C 10–12; on CREA: 25 °C 10–12, weak acid production.

Colony characters at 25 °C in 7 d — On CYA, colonies velvety, slightly raised at the centre, radially sulcate, mycelium brownish grey (7C2) to yellow (3A7), margin entire; reverse reddish brown (9F8) to greyish yellow (3B5); conidial sporulation absent; abundant production of cleistothecia; exudate present, consisting of small hyaline to yellow droplets along the sulcus; soluble pigment golden yellow (5B7). On MEA, colonies granular, flat, mycelium white, margin entire; reverse greyish yellow (4B5); abundant cleistothecia; conidial sporulation absent; exudate and soluble pigment absent. On YES, colonies somewhat cerebriform at the centre, radially sulcate towards the periphery, mycelium white; reverse brown (6E8); sporulation absent; exudate and soluble pigment absent. On OA, colonies granular, flat, mycelium white, margin entire; reverse light yellow (2A5); abundant production of cleistothecia; conidial sporulation scarce, with conidial masses dull green; exudate and soluble pigment absent.

Micromorphology — *Conidiophores* only observed on OA, monoverticillate; stipes 20–50 × 2–2.5 µm, smooth-walled, hyaline. *Phialides* in verticils of 3–4 per verticil, ampulliform, 8–10 × 2–2.5 µm. *Conidia* globose to subglobose, 2.5–3 × 2–3 µm, smooth-walled. *Cleistothecia* ripen after 1–2 wk on CYA, MEA and OA at 25 °C, superficial, globose, 90–210 µm diam, greyish yellow. *Asci* clavate to ovoid, 7–9 × 5–7 µm. *Ascospores* mostly subglobose, 3–4 × 3–3.5 µm, finely spiny, with conspicuously pleated subequatorial crests.

Typus. URUGUAY, Colonia Del Sacramento, from soil, 2007, collector unknown (holotype FMR H-14490, cultures ex-type CBS 143247 = FMR 14490; LSU, ITS, *BenA* and *CaM* sequences GenBank LT904730, LT904729, LT904699 and LT904698, MycoBank MB822920).

Maximum likelihood (ML) tree obtained from the analysis of ITS, *BenA* and *CaM* sequence data. Bootstrap support values above 70 % are shown at the nodes. The alignment included 1387 bp (ITS 490 bp, *BenA* 444 bp, *CaM* 453 pb) and was performed with ClustalW and MUSCLE. Kimura-2-parameter (K2P) with Gamma distribution and invariant sites (G+I) was used as the best nucleotide substitution model. Both the alignment and tree were constructed with MEGA v. 6.06 (Tamura et al. 2013). The name in red is the new species described. † = type strain.

Colour illustrations. Lighthouse at Colonia Del Sacramento, Uruguay (image credit: Rosa Cabecinhas and Alcino Cunha); colonies growing on CYA observe, CYA reverse, MEA observe, MEA reverse, YES observe and OA observe, after 15 d at 25 °C; ascoma, peridial wall; asci; conidiophores; conidia; ascospores. Scale bars: 100 µm (ascoma), 10 µm (all others).

Notes — *Penicillium uruguayense* belongs to sect. *Lanata-Divaricata*. Phylogenetically, it is located in a basal branch in the *P. javanicum* clade (Visagie et al. 2015). This clade includes other sexually reproducing species, i.e., *P. caperatum*, *P. elleniae*, *P. javanicum*, *P. malacosphaerulum* and *P. reticulisporum*. *Penicillium uruguayense* is characterised by having good growth at 37 °C on all media tested, by the production of acid on CREA and by its restrictive growth on DG18. Within the *P. javanicum* clade, only *P. elleniae* and *P. caperatum* produce acid on CREA. However, the latter two species have ascospores with two longitudinal flanges or equatorial ridges (Visagie et al. 2015), which are inconspicuous and subequatorial in *P. uruguayense*. In addition, *P. caperatum* has smooth ascospores, whereas in *P. elleniae* and *P. uruguayense* they are spinose. The latter two can be differentiated by their conidial ornamentation, i.e., spinose in *P. elleniae* and smooth in *P. uruguayense*. *Penicillium malacosphaerulum* and *P. reticulisporum* also have smooth conidia, but their ascospores are finely rough-walled with two longitudinal flanges. *Penicillium javanicum* and *P. uruguayense* are the only species in the clade showing ascospores with an inconspicuous longitudinal furrow, but unlike the other related species, *P. javanicum* produces roughened stipes.

