Geotrichum vulgare sp. nov., a novel asexual arthroconidial yeast

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Two strains of a novel yeast species were isolated from different habitats, from soil in an alluvial zone national park in Austria and from a drain in a Turkish soft drinks factory. Analysis of the nucleotide sequences of the D1/D2 region of their large-subunit rDNAs and PCR fingerprints show that the strains are members of the same species, described as Geotrichum vulgare sp. nov. Analysis of nucleotide sequences showed that this species is related to the ascogenous genus Galactomyces. The closest phylogenetic relative is Geotrichum silvicola, a recently described species. The type strain of Geotrichum vulgare is HA1379T (≡CBS 10073T ≡NRRL Y-27915T).

The anamorphic genus Geotrichum Link: Fries consists of 12 species having their teleomorphs in the genera Dipodascus Lagerheim and Galactomyces Redhead and Malloch (Barnett et al., 2000; de Hoog et al., 1986, 1998a, b; Kurtzman & Robnett, 1998; Pimenta et al., 2005). One species, Geotrichum silvicola Pimenta, Prasad, Lachance et Rosa, was described recently (Pimenta et al., 2005). Four strains of this species were isolated from flies of the genus Drosophila and two strains were found on larvae of the oak tasar silk worm, Antheraea proylei. The D1/D2 region of the large-subunit rDNA of Geotrichum silvicola differs by 15 substitutions from that of an undescribed species, designated by Kurtzman & Robnett (1998) as Galactomyces sp. NRRL Y-6418.

In this paper, a novel species of Geotrichum is described consisting of two strains from different habitats. One strain was isolated from soil in an alluvial zone forest in Austria and the other originated from a drain in a soft drinks factory in Turkey.

Yeast isolation and characterization

Strain HA1379T was collected in November 1999 from soil in an alluvial zone forest national park (‘Nationalpark Donauauen’) along the river Danube downstream from Vienna, Austria, near Mannswörth, as part of a biodiversity study on microfungi and yeasts (Wuczkowski et al., 2003a, b). The sampling and isolation procedures are described in Wuczkowski et al. (2003a, b). StrainNCYC 3138 was isolated from a drain in a soft drinks factory in Turkey and deposited in the NCYC by Dr M. Stratford (Unilever Research, UK). Both strains were characterized by standard methods (Yarrow, 1998).

Sequencing and PCR-fingerprinting

Sequencing of the D1/D2 region of the 26S rDNA and PCR fingerprinting were performed as described in Wuczkowski et al. (2003a, b).

Species delineation and identification

Strains HA1379T and NCYC 3138 show identical nucleotide sequences in the D1/D2 region of the 26S rDNA. The results of PCR fingerprinting (Fig. 1) show a high degree of similarity between the two strains and therefore it is highly likely that these strains belong to the same species. After growth on sporulation media (potato-dextrose agar, cornmeal agar, malt extract agar), ascii were not found.

The nearest relative to the novel species is Geotrichum silvicola, a recently described species which belongs to a clade of several Galactomyces species (Pimenta et al., 2005). Geotrichum silvicola shows 13 substitutions within the D1/D2 region of the 26S rDNA when compared with the strain HA1379T.
The sequence was compared with already published sequences retrieved from GenBank via the CLUSTAL_X program (Thompson et al., 1997). A neighbour-joining tree was constructed with the TREECON software package (Van de Peer & De Wachter, 1994), using the Kimura model (Kimura, 1980). Bootstrap values were calculated by 500 replications. Percentage bootstrap values (shown at branch nodes) were obtained from 500 replications. Bar, 5% sequence divergence.

Fig. 2. Neighbour-joining tree based on nucleotide sequences of the D1/D2 region of the 26S rDNA of Geotrichum vulgare and its relatives. Percentage bootstrap values (shown at branch nodes) were obtained from 500 replications. Bar, 5% sequence divergence.

Latin diagnosis of Geotrichum vulgare
Wuczkowski, Bond et Prillinger sp. nov.


Description of Geotrichum vulgare Wuczkowski, Bond & Prillinger sp. nov.

After 7 days on malt extract-yeast extract agar at 24 °C, colonies are white, flat, dry and powdery to finely hairy. Arthroconidia are abundantly present (see Fig. 3 and Supplementary Fig. S1. in IJSEM Online). Hyphae are 3–7 μm wide with early disarticulation into cubic arthroconidia. Arthroconidia are 3–5 μm wide and 5–70 μm long.
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**References**


