

Phylogenetic affinities of Hymenochaetales isolated from heart rots of grapevine in Australia

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Fomitiporia mediterranea (Hymenochaetales, Basidiomycota) and *F. punctata* are heart rot pathogens of *Vitis* in Southern Europe and North America respectively. They are responsible for the white heart rot component of the disease complex esca. In Australia, similar heart rots have been observed and fungi referable to the Hymenochaetales have been isolated (Figure 1). However, associated fungal fruiting bodies have been exceedingly rare, and in all cases have been in such poor condition that confident identifications could not be made.



Figure 1. Typical heart rot symptoms and isolated Hymenochaetales in culture.

In order to determine to which genera these fungi belong, a portion of the nuclear ribosomal DNA large subunit (LSU) was sequenced from several isolates. These were aligned with Hymenochaetales sequences obtained from GenBank and used to create a neighbour-joining tree, with 1000 bootstrap replicates (Figure 2). Two of these had nearly identical sequences (VPRI 22814 and VPRI 22493) and clustered within the genus *Inonotus*. Two other sequences (VPRI 22491 and VPRI 22859) both clustered within the *Fomitiporia* clade, however their sequences were not as similar to each other as the two *Inonotus* isolates. These four isolates seem to belong to at least three different species, of which only VPRI 22859 is similar to *F. punctata*.

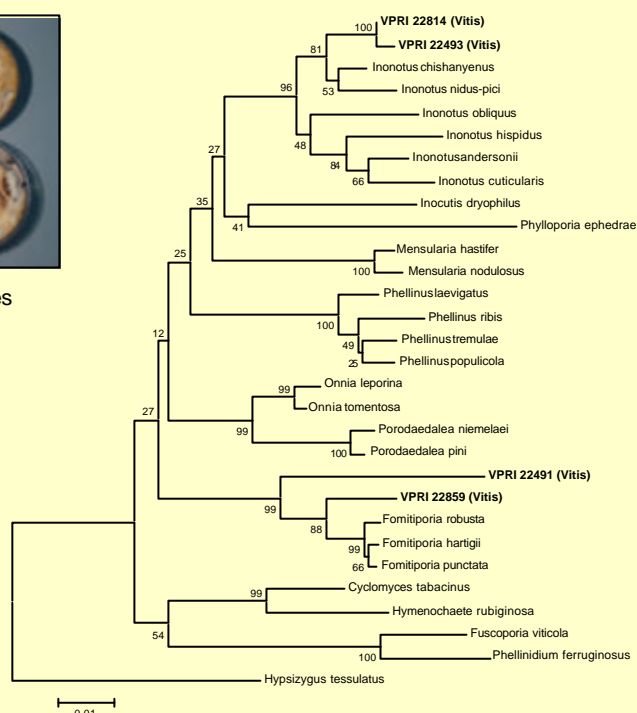


Figure 2. Phylogenetic position of four Hymenochaetales isolates based on rDNA LSU sequences.

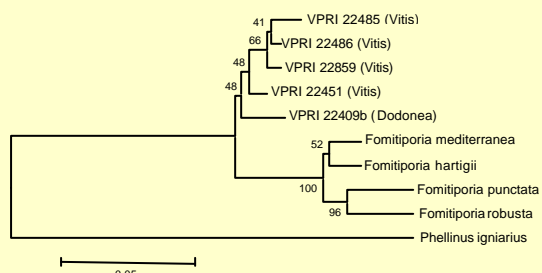


Figure 3. Phylogenetic relationship of *Fomitiporia* isolates based on rDNA ITS region.

Additional rDNA ITS sequences have been obtained for other isolates which are most morphologically similar to VPRI 22859 to better determine their relationship to *F. punctata* and *F. mediterranea*. From the resulting phylogenetic tree (Figure 3) it can be seen that they cluster closely together, but are distinct from other *Fomitiporia* spp. One specimen found growing on *Dodonea* next to a vineyard also falls in this group. It seems likely that neither *F. mediterranea* nor *F. punctata* are associated with grapevine heart rots in Australia, and that the species encountered are probably native to Australia.

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