doi:10.5598/imafungus.2014.05.01.09

IMA FUNGUS · VOLUME 5 · NO 1: 79–80

ARTICLE

Hymenoscyphus fraxineus, the correct scientific name for the fungus causing ash dieback in Europe

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Abstract: Under the rules for the naming of fungi with pleomorphic life-cycles adopted in July 2011, the nomenclaturally correct name for the fungus causing the current ash dieback in Europe is determined to be *Hymenoscyphus fraxineus*, with the basionym *Chalara fraxinea*, and *Hymenoscyphus pseudoalbidus* as a taxonomic synonym of *H. fraxineus*.

Key words:
Chalara fraxinea
Hymenoscyphus pseudoalbidus
Pleomorphic fungi

Article info: Submitted: 21 May 2014; Accepted: 21 May 2014; Published: 23 May 2014.

INTRODUCTION

A serious disease of European ash (*Fraxinus excelsior*) was first detected in about 1995, and later described as *Chalara fraxinea* from Poland (Kowalski *et al.* 2006), a spermatial morph that has since been recorded from various European countries (Gross *et al*. 2014). A few years after *C. fraxinea* was published, a sexual morph was connected to it by molecular methods and identified as *Hymenoscyphus albidus* (Kowalski & Holdenrieder 2009). However, known in Europe since 1850 or earlier (Desmazières 1850, as *Peziza albida* Roberge 1850, non With. 1792) as a saprobic species on blackened parts of ash leaves, *H. albidus* has never been reported to be pathogenic. Based on molecular sequences gained from apothecia or cultures of samples from Switzerland and other European countries, Queloz *et al.* (2011) determined that *H. albidus* represented an aggregate of two clearly delimited species that the authors considered morphologically indistinguishable. One of them was the only species that occurred in regions without ash dieback, hence it was concluded that this represents genuine *H. albidus*. The other produced a *Chalara* asexual morph identical to *C. fraxinea* in culture and was described as *H. pseudoalbidus*. This pathogen was later shown to have been introduced from Asia (Zhao *et al.* 2012), where it had previously been reported under the name *Lambertella albida* (syn. *Hymenoscyphus albidus*) by Hosoya *et al.* (1993).

NOMENCLATURE

In July 2011, at the nomenclature session of the International Botanical Congress (IBC), it was decided to abandon the dual naming system for pleomorphic fungi such that each fungal species can have only one name as dictated by the *International Code of Nomenclature for algae, fungi, and plants* (ICN) (McNeill *et al.* 2012). Determining the scientific name is based on the principle of priority, with some safeguards for protecting well-established names. At the times when the asexual morph name *Chalara fraxinea*, and the sexual morph name *Hymenoscyphus pseudoalbidus*, were described, separate scientific names for the different morphs were allowed. However, with the change in the rules of nomenclature pertaining to fungi, the oldest species epithet must now be placed in the correct genus. Art. 57.2 of the ICN suggests that where names based on different morphs are both widely used, an earlier name typified by the asexual morph should not be taken up until either a proposal to reject the asexually typified name has been made and rejected, or the name has been proposed for inclusion in a list of protected names. This is a difficult rule to apply because of the issue of defining "widely used", and changing this to a recommendation has been proposed (Hawksworth 2014). A check on usages of names in Google Scholar on 21 May 2014, revealed 538 uses of the specific epithet in *Chalara*, and 248 usages of the specific epithet in *Hymenoscyphus*. As "*fraxinea*" has been much more widely used than "*pseudoalbidus*", we do not consider that in this instance there is a case for initiating the lengthy formal process for the rejection of "*pseudoalbidus*".

Based on the molecular phylogeny of *Leotiomycetes,* including the type species of *Hymenoscyphus* (*H. fructigenus*) and the type species of *Chalara* (*C. fusidioides*), Réblová *et al.* (2011) established that these two genera are not synonyms. Rather, this ash dieback fungus was found to be closely related to the type species of *Hymenoscyphus* (Zhao *et al.* 2012), and thus appropriately accommodated in that genus, according to its present circumscription. However, the oldest epithet provided by *C. fraxinea* must be combined into the taxonomically correct genus *Hymenoscyphus*.

Hymenoscyphus fraxineus (T. Kowalski) Baral, Queloz, Hosoya, **comb. nov.**
MycoBank MB808884
Basionym: *Chalara fraxinea* T. Kowalski, *For. Path.* **36**: 265 (2006).
Synonym: *Hymenoscyphus pseudoalbidus* Queloz *et al*., *For. Path.* **41**: 140 (2011).

Sequences of the ITS1-5.8S-ITS2 and some other gene regions from the holotypes of both *Chalara fraxinea* (CBS 122504) and *Hymenoscyphus pseudoalbidus* (Oth_01) are deposited in GenBank (ITS: *C. fraxinea*: FJ597975, *H. pseudoalbidus*: GU586904).

DISCUSSION

Having one scientific name for this fungus will allow scientists and plant quarantine officials concerned with this disease to communicate unambiguously.

ACKNOWLEDGEMENTS

Amy Y. Rossman, Marc Stadler, and David L. Hawksworth are thanked for their assistance with this article.

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