

Postia alni Niemelä & Vampola (Basidiomycota, Polyporales) - member of the problematic *Postia caesia* complex - has been found for the first time in Hungary

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Abstract

Due to their bluish basidiocarps the *Postia caesia* (syn. *Oligoporus caesius*) complex forms a distinctive morphological group within the polypore genus *Postia* Fr., 1874. Five species of this group occur in Europe: *P. alni* Niemelä & Vampola, *P. caesia* (Schröd.) P. Karst., *P. luteocaesia* (A. David) Jülich, *P. mediterraneocaesia* M. Pierre & B. Rivoire and *P. subcaesia* (A. David) Jülich. In this study *P. alni* is reported for the first time from Hungary. The dichotomous key of the species of the European *Postia caesia* complex was prepared as well.

Keywords

Postia alni, *Postia caesia* complex, *Oligoporus*, polypore, Hungary

Introduction

Postia Fr. is a brown rot polypore genus, which contains annual species with mainly soft, whitish basidiocarps, thin-walled, hyaline spores and monomitic hyphal system with clamped generative hyphae (Jülich 1982). Previously most of the taxa were considered to be members of the genus *Tyromyces* P. Karst. (e.g. Donk 1960, Jahn 1963, David 1974). However, Jülich (1982) proved that the type (*T. chioneus* (Fr.) P. Karst.) of *Tyromyces* P. Karst. is a white rot species. Hence he examined *Tyromyces* s. l. and found that *Postia* Fr. Fries, 1874 is the earlier legitimate name of the brown rot *P. caesia* and *P. subcaesia*. Ryvarden and Gilbertson combine for the same species into the genus *Oligoporus* Bref., 1888, based on the opinion, according to which *Postia* Fr. is a *nomen provisorium* or *nudum* of Fries (Gilbertson and Ryvarden 1985, Ryvarden and Gilbertson 1994). Nevertheless, the solution of Jülich that *Postia* was validly published by Fries (Fries 1874)

was accepted by several mycologists (e.g. Larsen and Lombard 1986, Renvall 1992, Pegler and Saunders 1994). Previous phylogenetic study of *Tyromyces* s. l. shows that the distinction between *Postia* and *Oligoporus* is not significant (Yao et al. 1999). However a recent work shows that the two genera are different and the species of the *Postiacaesia* complex belong to the *Postia* sensu stricto clade (Ortiz-Santana et al. 2013).

Based on the bluish tints of the basidiocarp and the lack of the chlamydospores in culture, *Postiacaesia* complex forms a distinctive morphological group within the genus (Tura et al. 2008). Five species of this group occur in Europe. *Postiacaesia* (Schrad.) P. Karst. is a widespread species around the world, which in Europe grows preferably on gymnosperms (Bernicchia 2005, Ryvarden and Gilbertson 1994). *Postiasubcaesia* (A. David) Jülich is macroscopically similar, but mainly grows on angiospermic trees and has narrower spores (Ryvarden and Gilbertson 1994). *Postiaalni* Niemelä & Vampola also occurs on deciduous trees, but has smaller basidiocarp and the surface of the pileus is not as hairy as that of the *P.subcaesia* has (Fig. 2) (Niemelä et al. 2001). *Postialuteocaesia* (A. David) Jülich is a rare Central-European species, which grows on *Pinus*. The main characteristic of this species is the bright yellow color of the basidiocarp besides the blue-grayish discoloration (Niemelä et al. 2004, Ryvarden and Gilbertson 1994). From the Mediterranean region *P.mediterraneocaesia* M. Pierre & B. Rivoire has been described which has spores wider than 1.5 µm as *P.caesia* and *P.luteocaesia* (Pieri and Rivoire 2005).

Based on microscopic characters and host preference *Postiaalni* shows a great similarity to *P.subcaesia*. It differs by the matted pileus surface and the smaller size of the basidiocarp (Niemelä et al. 2001, Piątek 2003). Previously some mycologists (Enderle 1979, Jahn 1963, Vampola 1994) also observed the macroscopical variability of *P.subcaesia* s. l., but there was not any valid new taxa name published. Velenovsky described a species (*Polyporusalni* Velen., 1922) which is identical with *Postiaalni*, however it is illegitimate, because it is a later homonym of *Polyporusalni* Sorokin, 1892. Accordingly, Niemelä and Vampola described the new species under the name *Postiaalni*, retaining the epithet, which was given by Velenovsky (Niemelä et al. 2001).

Previously in Hungary, only two species were known within the *Postiacaesia* complex: *P.caesia* and *P.subcaesia* (e.g. Igmándy 1991, Szabó 2012). In this study *P.alni* is recorded for the first time from Hungary from two locations.

Materials and methods

The basidiocarps (Fig. 3) were collected in Juhdöglő-völgy Forest Reserve (Vértes Mts) and Dobogókő (Visegrádi Mts). Both of them were growing on dead *Fagussylvatica*. The specimens (PV188, PV977) were placed into the personal collection of the author (PV) and are available at the Botanical Department of Corvinus University of Budapest, Hungary. The identification of the specimens were based on the works of Niemelä et al. (2001) and Piątek (2003). For microscopical studies a Zeiss Axio Imager.A2 light microscope was used. For the measurements a × 1000 magnification objective, oil immersion and the program AxioVision Release 4.8.2 were used. The line drawings of the anatomical

characteristics of the basidiocarp (Fig. 1) were made by the author with a drawing tube. The key of the European *Postiacaesia* complex was prepared after the following works: Bernicchia (2005), Niemelä et al. (2001), Niemelä et al. (2004), Pieri and Rivoire (2005) and Ryvarden and Gilbertson (1994).

Taxon treatment

Postia alni Niemelä & Vampola, 2001

Materials

- a. continent: Europe; country: Hungary; county: Fejér; locality: Juhdöglő-völgy Forest Reserve; year: 2010; month: 9; day: 14; habitat: on dead *Fagus sylvatica*; recordNumber: PV 188; recordedBy: V. Papp; institutionID: Corvinus University of Budapest; occurrenceID: 0F9A0BE4-3D2B-5BCD-8C5D-541A9ED94C00
- b. continent: Europe; country: Hungary; county: Pest; locality: Dobogókő; year: 2013; month: 11; day: 24; habitat: on dead *Fagus sylvatica*; recordNumber: PV 977; recordedBy: V. Papp; institutionID: Corvinus University of Budapest; occurrenceID: 4E4E0158-902F-59C4-B8D5-598025181BE4

Description

Basidiocarp annual, up to 3(–5) cm, white or cream color with bluish-grey tint. Pileus surface azonate, glabrous or slightly tomentose, but not fairy. Pores roundish, 4–5/mm. Context whitish, not zonate, soft when fresh, hard when dried. Hyphal system monomitic. Hyphae with clamp connections, thin- to thick-walled, 2.6–4.2 µm wide. Some contextual hyphae with finger-like branches. Cystidia absent and no cystidioles. Basidia clavate with 4 sterigmata and basal clamp, 10.2–15.6 µm. Basidiospores mostly allantoid, thin walled, 4.7–5.6 × 1.1–1.4 µm.

Identification keys

Key to the European <i>Postia caesia</i> complex		
1	Basidiospores 1.5–2(2.2) µm wide, occurs on conifers or hardwoods	2
–	Basidiospores up to 1.5 µm wide, occurs mainly on hardwoods	4
2	Pore surface vivid yellow, basidiospores (4.5–)4.7–6.3(–6.5) × (1.5–)1.6–1.9(–2) µm (Q = 3.03–3.15), growing on <i>Pinus</i> , rare species	<i>P. luteocaesia</i>
–	Bright yellow color not present	3

3	Mediterranean species, basidiocarps small size (up to 25 mm long), lightly greyish-blue when bruised, hyphae in pileipellis are encrusted, basidiospores $(4.25\text{--}4.7\text{--}(6.12) \times (1.45\text{--})1.5\text{--}(1.68) \mu\text{m}$ ($Q = 3.2$), occurs on conifers and hardwoods	<i>P. mediterraneocaesia</i>
–	Wide spread species, basidiocarps larger (up to 6 cm long), upper surface tomentose to hairy, strongly bluish when bruised, basidiospores $(4.4\text{--})4.5\text{--}5.8\text{--}(6) \times (1.3\text{--})1.5\text{--}1.8\text{--}(2) \mu\text{m}$, occurs mainly on conifers	<i>P. caesia</i>
4	Basidiocarps orbicular, small, up to 4(5) cm, upper surface matted, or with very low tomentum, not hairy	<i>P. alni</i>
–	Basidiocarps wide, larger, usually more than 5 cm, upper surface hairy	<i>P. subcaesia</i>

Discussion

There are many difficulties related to the identification of the species of the *Postia* complex. There are some confusing East-Asian collection data that cannot be identified as either *P. alni* or *P. subcaesia* (Tura et al. 2008). For instance, Wei and Dai (2006) mentioned *Postia alni* from China and gave spore size (less than $4 \mu\text{m}$) that is different from the European taxa ($4.4\text{--}6 \mu\text{m}$ in Niemelä et al. 2001). Molecular data (Yao et al. 2005) showed that the taxonomy of this group is more complicated and further studies are needed for the identification of the species of the complex.

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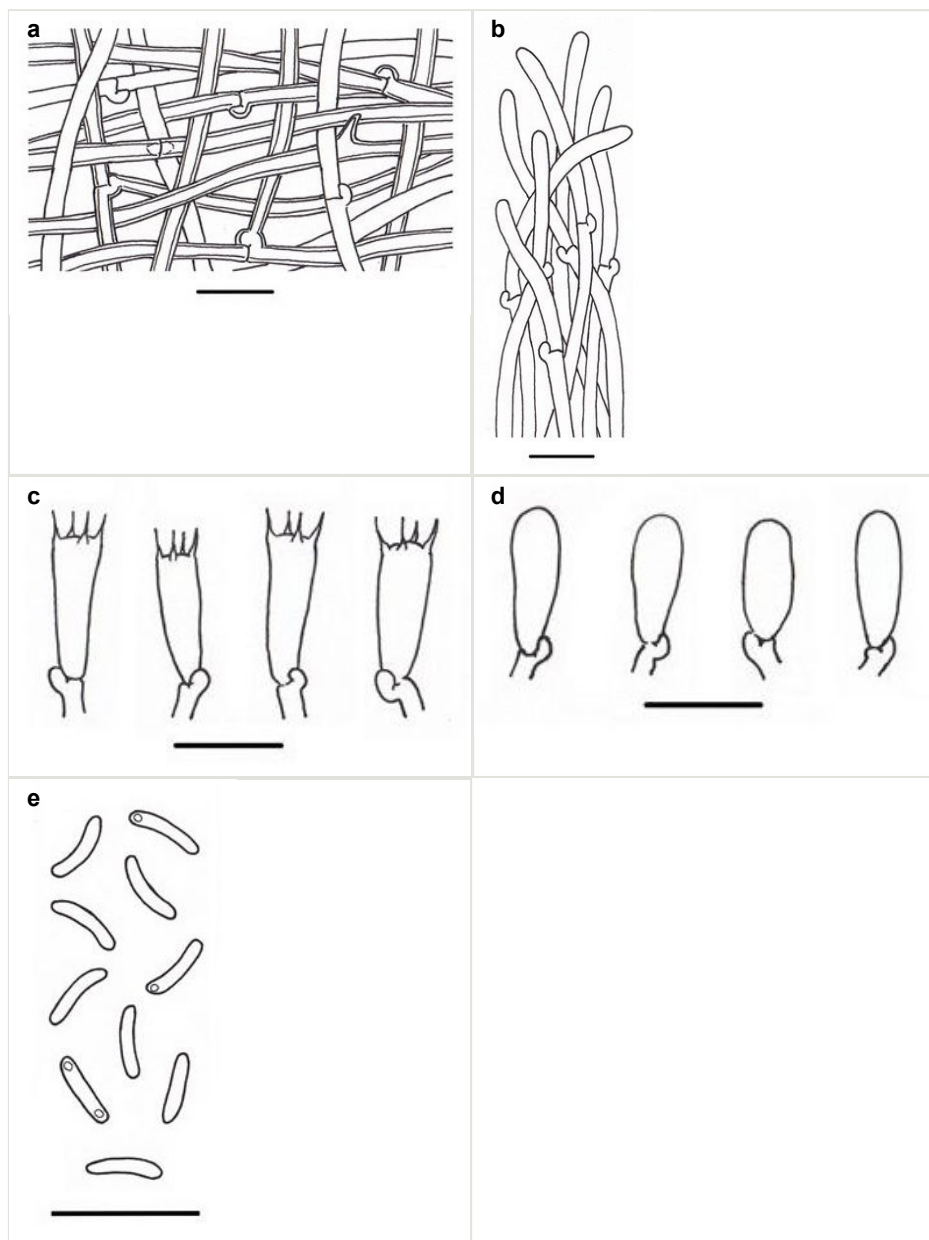


Figure 1.

Anatomical structure of *Postiaalni* (PV188). Scale bar = 10 μm. Drawings: V. Papp.

a: Contextual hyphal system;

b: Hyphae from dissepiments edge;

c: Basidia;

d: Basidioles;

e: Basidiospores.

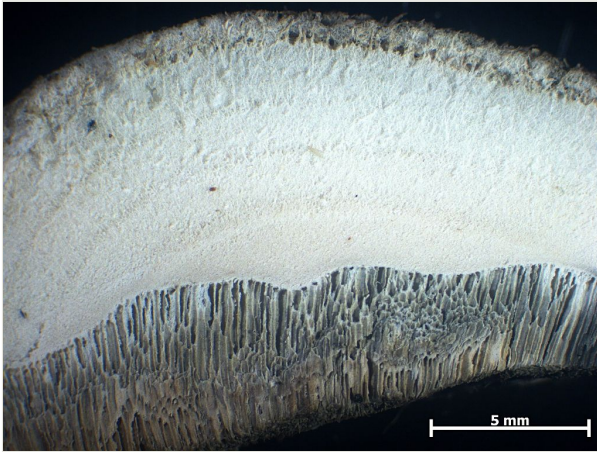


Figure 2.
Cross-section of the basidiocarp of *Postia subcaesia*. Photo: V. Papp.

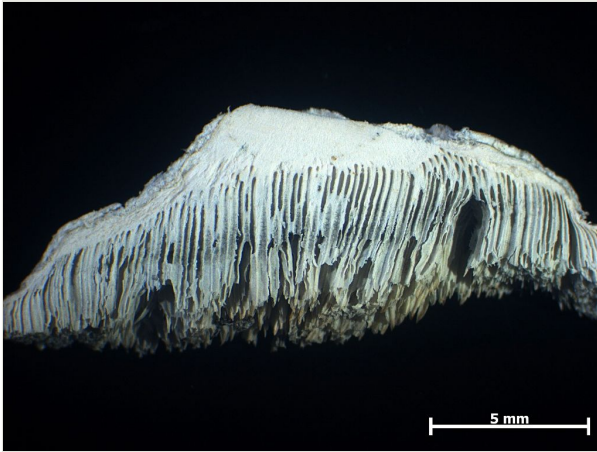


Figure 3.
Cross-section of the basidiocarp of *Postia alni*. Photo: V. Papp.