

***Passalora rhamnaeearum* comb.nov. (Capnodiales, Mycosphaerellaceae) from India**

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(Submitted in October, 2016; Accepted on June 15, 2017)

**ABSTRACT**

The hyphomycete *Phaeoramularia rhamnaeearum* is recombined as *Passalora rhamnaeearum* based on critical re-examinations of type collections. The species was originally collected on leaves of *Ziziphus jujuba* during a taxonomic survey carried out in Pankaj Nursery at Sagar, India.

**Key words:** Anamorph, new combination, *Passalora*, taxonomy

**INTRODUCTION**

The main diagnostic feature that separates the two cercosporoid genera *Phaeoramularia* Munt.-Cvetk. (Muntañola, 1960) and *Passalora* Fr. (Fries, 1849) is formation of solitary conidia in *Passalora*. When Crous and Braun (2003) emended the circumscription of *Passalora*, they placed *Phaeoramularia* synonymous to the former taxon. According to their observation the formation of single or catenate conidia is not a stable feature for the diagnosis at generic level in cercosporoid hyphomycetes. This was also confirmed by ITS and 5.8S rDNA sequence analyses (Crous *et al.*, 2001). Based on the new generic classification and re-examinations of hundreds of type collections of species assigned to *Cercospora* and thousands of non-type specimens, Crous and Braun (2003) published an annotated check-list of *Cercospora* and *Passalora* which changed the entire concept of the taxonomy of cercosporoid fungi. Their contributions have confirmed that presence or absence of thickened conidiogenous loci and pigmentation in conidiophores and conidia are important features of taxonomic relevance (Braun *et al.*, 2013; 2014; 2015; Crous and Braun, 2003; Kamal, 2010). During the last decade a large number of cercosporoid fungi have been recombined in the genus *Passalora* (Braun *et al.*, 2013; 2014; 2015; Crous and Braun, 2003), particularly from India (Kamal, 2010). Recently, additional *Passalora* species have been described from India (Singh *et al.*, 2012; 2013; Kumar and Singh, 2015; 2016), suggesting that the diversity of such fungi is still insufficiently known in this region.

Accordingly, based on the new taxonomic criterion, we propose transfer of the previously reported species, *Phaeoramularia rhamnaeearum* (Shrivastava *et al.*, 2009), to *Passalora*.

**MATERIALS AND METHODS**

Original type materials (holotype and isotype) have been examined separately in distilled water and lectophenol cotton-blue. Free hand section through infection spots on leaves were examined under a Olympus BX-51 light microscope to understand the morphology of the fungus. Measurements of conidia, hila, conidiophores and conidiogenous cells (30 each), were recorded with the help of stage and ocular micrometers.

**TAXONOMY**

Literature survey revealed that, this fungus has been

described earlier as *Phaeoramularia rhamnaeearum* Shrivastava *et al.* (2009). As the fungus is characterized by thickened scars and coloured conidiophore and conidia, it is taxonomically correct to recombine the fungus into *Passalora* (Crous and Braun, 2003).

***Passalora rhamnaeearum*** (S. Shrivastava *et al.*) Raghv. Singh & Sham. Kumar, *comb. nov.* **Figs. 1-4**

**MycoBank no: MB812408**

≡ *Phaeoramularia rhamnaeearum* S. Shrivastava, N. Verma & A.N. Rai, *J. Mycol. Pl. Pathol.* **39** (2): 305-307, 2009.

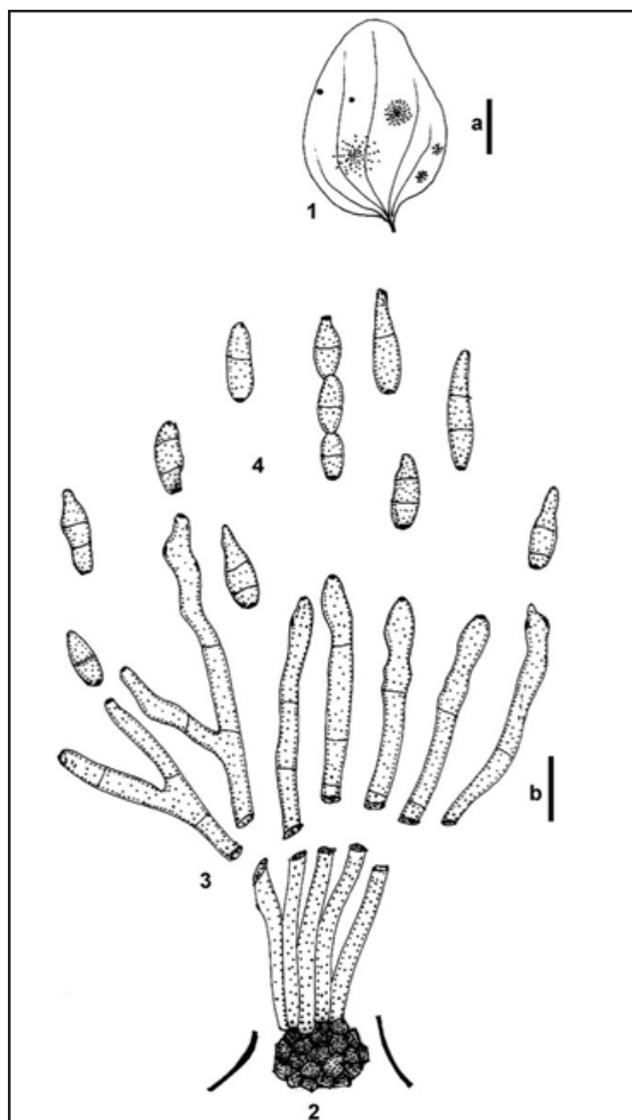
Description based on type material: Infection spots epigenous, circular to irregular, brown. Colonies hyphophyllous, effuse, thickly covered with black powdery mass. Mycelium internal. Stromata well developed, immersed, pseudo-parenchymatous, dark brown, 21-25 µm in diam. Conidiophores macronematous, 4-10 fasciculate, branched, erect to procumbent, straight to flexuous, geniculate, smooth, 2-6-septate, thick-walled, mid brown, (30-)34-110(-122) × (5-)4-6(-7) µm. Conidiogenous cell integrated, terminal, polyblastic, cylindrical, usually swollen at apex, loci thickened and darkened, 1-1.5 µm wide. Conidia simple, solitary, sometimes catenate, dry, acropleurogenous, smooth, thin walled, obclavate-cylindrical, ellipsoid to ovoid, upto 3-septate, slightly constricted at the septa, light brown, apex subacute to obtuse, base sub truncate, (10-)12-32(-38) × (4-)5-8(-9) µm, hilum thickened, 1-1.5 µm wide.

**Known distribution:** India (Shrivastava *et al.*, 2009).

**Material examined:** India, M.P., Sagar, Pankaj Nursery, 23° 5' N, 78° 5' E, on living leaves of *Ziziphus jujuba* Mill. (*Rhamnaceae*), November 1999, leg. S. Shrivastava, S.U. Herb No. SSR 17 (isotype), HClO 44238 (holotype).

**DISCUSSION**

The two related *Passalora* species reported on *Ziziphus* spp. are quite different from *P. rhamnaeearum*. *P. ziziphi* (Prasad & Verma) U. Braun & Crous [≡ *Tandonella ziziphi* Prasad & Verma (Prasad and Verma, 1970)] reported on *Ziziphus jujuba* Mill. has synnematous, unbranched and longer conidiophores (≥350 × 35 µm). Another species *Passalora ziziphicola* (Bhalla *et al.*) U. Braun & Crous [≡ *Mycovellosiella ziziphi* K. Bhalla, K. Srivastava and A.K. Srivastava, 1996 (Bhalla *et al.*, 1996)] was also reported on *Ziziphus jujuba* Mill. [≡ *Ziziphus mauritiana* Maire] (Crous



**Figs.1-4:** *Passalora rhamnaecearum*. (HCIO44238, holotype).  
1-Symptoms, 2-Stromata, 3-Conidiophores,  
4-Conidia. Scale bars: a = 20 mm, b= 20μm.

and Braun, 2003). It has mostly superficial mycelium which form rope-like structure ascending on leaf hairs, stromata altogether absent and conidiophores arise singly from external hyphae, unbranched, shorter in size.

#### ACKNOWLEDGMENTS

Sincere thanks are due to the herbarium incharge and curator of the herbaria SSR and HCIO for making it possible to examine collections in their keeping. We express our deep appreciation to Prof. Dr. Kamal, Emeritus Scientist (DST), D.D.U. Gorakhpur University, Gorakhpur for valuable suggestions and kind help. We are thankful to the Head of the Department of Botany of Banaras Hindu University, Varanasi, U.P. for necessary facilities. This work was financially supported by a project from UGC-Faculty Research Promotion Scheme (FRPS), Govt. of India, sanctioned to RS.

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