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# AN ADDITION TO *PHLOEOSPORELLA* HOHN.

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**Abstract**

A new combination *Phloeosporella salvodorae* (Prasad, Singh & Bhatnagar) Abbas, Sutton & Ghaffar is proposed based on *Septogloeum salvadorae* Prasad, Singh & Bhatnagar.

## Introduction

*Salvadora*, is a xerophytic plant of the arid zone and is widely distributed in Pakistan, India, Iran, Afghanistan, Saudi Arabia, Sudan, Sahara etc., (Jafri, 1966, Stewart, 1972). In Pakistan, *Salvadora oleoides* and *S. persica* are common bushes found with *Prosopis* spp., and *Capparis decidua*. Atleast 26 different fungi have been described on *Salvadora* (Abbas, 1995) including Coelomycetes viz., *Diplodia salvadorina*, *Microdiplodia salvadorina*, *Coniothyrium salvadorinum* (as *Coniothyrium salvadorina*), *Sphaeropsis salvadorae* (Ahmad, 1951, 1962, 1964, 1971; Abbas & Sutton, 1989), *Cytosporella salvadorae*, *Haplosporella salvadorae* (Petrak & Ahmad, 1954), *Septogloeum salvadorae* (Prasad *et al.*, 1961). A new Coelomycete genus *Seimatosporiopsis* was described by Sutton *et al.*, (1972) followed by additions of *Aphanofalx irregularis* (Sutton & Abbas, 1986), *Avettaea salvadorae, Myrotheciastrum salvadorae* (Abbas & Sutton, 1988a, 1988b). Recently Abbas *et al.*, (1998) described a new genus *Seimatosporiella*.

Fungi on *Salvadora* with hyaline, multiseptate, cylindrical conidia are *Septogloeum salvadorae*, *Cercospora udaipurensis* (Prasad *et al.*, (1961) and *C. salvadorae* (Maire, 1949). Deighton proposed a new combination *Pseudocercospora salvadorae* based on *Cercospora salvadorae* with *C. udaipurensis* as a synonym.

During an examination of type specimens of *Septogloeum salvadorae* on *Salvadora persica* deposited at IMI, it was observed that conidiogenous cells proliferate holoblastically (Hologenous *sensu* Hennebert & Sutton, 1994) and sympodially rather than enteroblastically (Enterogenous *sensu* Hennebert & Sutton, 1994) with succession of sequential conidia formed at the same level (Stationary *sensu* Hennebert & Sutton, 1994) which is characteristic of *Septogloeum* (Sutton & Pollack, 1974). *Septogloeum* is clearly not the correct name for this species. *Phloeospora*, (Wallroth, 1833) and *Phloeosporella* Höhn., (Höhnel, 1924; Sutton, 1980) are two genera which closely resemble *Septogloeum salvadorae* on *Salvadora persica*, however it differs in conidiogenesis. *Phloeospora* has holoblastic conidia (hologenous *sensu* Hennebert & Sutton, 1994) and enteroblastic percurrently proliferating conidiogenous cells (progressive

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*sensu* Hennebert & Sutton, 1994), whereas *Phloeosporella* has holoblastic conidia (hologenous *sensu* Hennebert & Sutton, 1994) with sympodial conidiogenous cells. *Phloeosporella salvadorae* is therefore proposed as a new name for *Septogloeum salvadorae* Prasad, Singh & Bhatnagar.

***Phloeosporella salvadorae***: (Prasad, Singh & Bhatnagar) comb. nov. (Fig.1).

***Septogloeum salvadorae***: Prasad, Singh & Bhatnagar, *Proc. Nat. Inst. Sci., India* Pt. B, 27: 283 (1961).

*Conidiomata* acervular, brown to black, amphigenous, circular, subepidermal, applanate to cupulate, 84-378x 63-126 μm; wall of textura angularis, 2-many cells thick, 10-32 μm wide, outer cells darker and thicker than the inner cells which are thinner and hyaline towards the conidiogenous region. *Conidiophores* hyaline, cylindrical, sometime bulbous at the base, smooth, 1-2 septate, 1-3 times irregularly or sympodially branched at the base, 9.5-30x3.2-6.4 μm. *Conidiogenous cells* cylindrical or lageniform, proliferating holoblastically (hologenous) and sympodially, 5-17.6x3.2-4.8 μm. *Conidia* holoblastic (hologenous), hyaline, cylindrical, 3-4 euseptate, smooth, cylindrical, straight, sometime slightly curved, constricted at the septa, apical part slightly wider than the basal part, apex obtuse, base truncate, 24-50.5 x 2-4 μm.

*Phloeosporella salvadorae* significantly differs from all the *Phloeosporella* species described. *P. ceanothi* (Ell. & Everh.) Höhn., and *P. ariaefoliae* (Ell. & Everh.) Sutton, have 2-septate conidia 4-6 μm wide (Höhnel, 1924; Sutton, 1980) whereas in *P. salvadorae* they are 3-4 septate and 2.4-4 μm wide. Similarly *P. hedysari* (Solheim) Sutton and *P. padi* (Lib.) Arx, (Sutton, 1980; Arx & Van der Velden, 1961) have only 1-septate conidia. *P. hedysari also* has wider conidia than *P. salvadorae*. Similarly *P. padi* (Sutton, 1980), has longer and narrower conidia (69-74x3 μm) compared with *P. salvadorae* (24-50.5x2.4-4μm). *P. pleromatum* (Speg.) Dyko & Sutton (Dyko, Sutton & Roquebert, 1979) also differs from *P. salvadorae* in having very long, narrrower (65-103x1.5-2.5 μm), 4-11 septate conidia than *P. salvadorae*. *P. leucosceptris* (Keissl.) Sutton, resembles *P. salvadorae* in having 3-5 septate conidia but differs in that they are longer and wider (45-70x4-5 μm) (Sutton, 1980). The basal cell sometimes has a foot cell and conidia are wider towards the base and taper to the apex. Recently Dianese *et al.*, (1993, 1993a) described two species of *Phloeosporella* viz., *P. kitajimae* Dianese, Medeiros & Santos on *Eugenia dysnterica* and *P. flavio-moralis* on *Eugenia*. These species clearly differ from *P. salvadorae*. Conidia in *P. kitajimae* are 5-17 septate and longer (70-180 x 3-4 μm) than *P. salvadorae* where conidia are (24-50.5 x 2-4 μm) and 3-4 septate. Conidia in *P. kitajimae* have an inflated cell towards the apical end which is absent in *P. salvadorae*. *P. flavio-moralis* and *P. salvadorae* are similar in having comparable conidial sizes, 24-50.5 x 3-4 μm in *P. salvadorae* and 32-50 x 3-5 μm in *P. flavio-moralis*. However, both species differ in that conidia are wider (3-5 μm) and constantly 1-3 septate in *P. flavio-moralis* and (2.4-4 μm) wide and 3-4 septate in *P. salvadorae*.

Specimens examined:

***Phloesporella salvadorae*** (Prasad, Singh & Bhatnagar) Abbas Sutton & Ghaffar, Comb. nov.

On leaves *Salvadora persica*, Ajmer, Rajastan, India, Feb. 1959, G.C. Bhatnagar (IMI 79222), holotype of *Septogloeum salvadorae*; on leaves of *Salvadora persica*,

Chandhan, Hyderabad, Pakistan, 20 Feb. 1968, Shakil Ahmed Khan (IMI 13705); on leaves of *S. oleoides*, Mirpurkhas, 11 Feb. 1959, Shakil Ahmed Khan (IMI 765235); on leaves of *S. oleoides*, Tandojam, 11 April 1961, S. Tahiruddin (IMI 192888).

***P. ariaefoliae*** (Ell. & Everh.) Sutton

On leaves of *Spiraea discolor*, West Fork Cotton wood, wood Creek, Siskiyou, California, U.S.A., 21 June 1934, L.C. Wheeler (IMI 92430), holotype.

***P. ceanothi*** (Ell. & Everh.) Höhn.

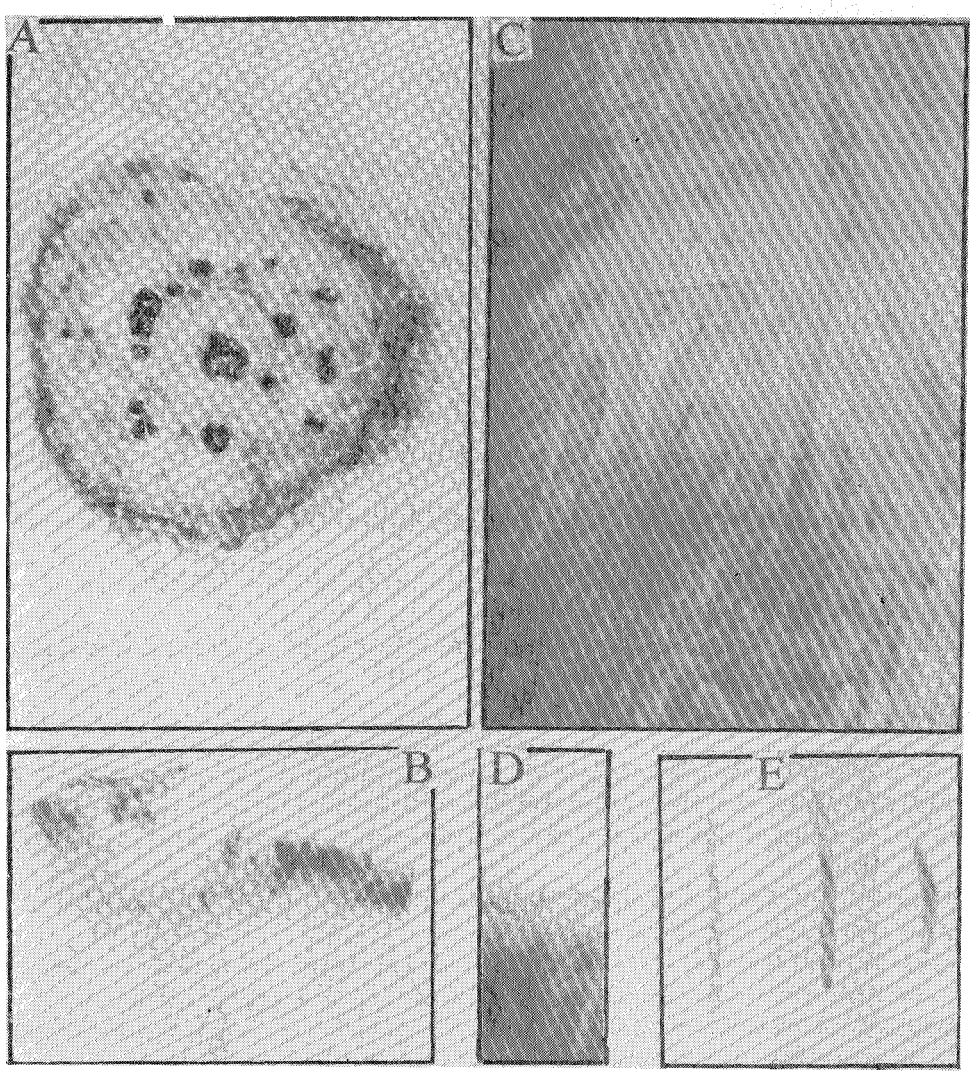


Fig.1. *Pholeosporella salvadorae* (A) Cupulate conidiomata on the leaf surface of *Salvadora persica*, 16X; (B) Vertical section of conidioma, 40X; (C) conidiophore, 1000X; (D) conidiogenous cells, 1000X; (E) conidia, 1000X.

On *Ceanothus velutinus*, Riyada Lane, Oregon, U.S.A., 4 Aug. 1921, J.S. Boyce, ex K (IMI 101343), holotype.

***P. hedysari*** (Solheim) Sutton

On leaves of *Hedysarum marginatum*, Teton Pass, Teton Mountain, Teton county, Wyoming, U.S.A., 28 July 1939, W.G. Solheim 1780, ex slide of Mycoflora Saximontanensis, Exsiccata W.G. Solheim (IMI 97269), isotype.

***P. leucosceptri*** (Keissl.) Sutton

On leaves of *Leucosceptrum canum*, Darjeeling, W.B. U.P. India, Singh (IMI 113593), holotype.

***P. pleuromatum*** (Speg.) Dyko & Sutton

On leaves of *Pleuroma* sp., Caa-Guazu, Brazil. Balusa 3428 (IMI 230774), holotype.

***Pseudocercospora salvadorae*** (Maire) Deighton

On leaves of *Salvadora persica*, Mauritania, Shar dune litorales vers 17 (N) South Western Sahara, 7 Mar. 1937, Mart, Recoltes de la misson etudes de la biologia. Mauritania occidentale No 19/Path., holotype of *P. salvadorae* (Maire) Deighton (= *Cercospora salvadorae* Maire); On *Salvadora persica*, Udaipur, Rajastan, India, Feb. 1960, R.D. Singh & G.C. Bhatnagar (IMI 865113) (= holotype of *Cercospora udaipurensis* Prasad, Singh & Bhatnagar).

**References**


Abbas, S.Q. 1995. *Taxonomical studies on the fungi (Coelomycetes) of Karachi*. Ph. D. Thesis, University of Karachi, pp. 267.

Abbas, S.Q. and B.C. Sutton. 1988a. An addition to *Avettaea* (Coelomycetes) from Pakistan. *Trans. Br. mycol. Soc.* 90: 491-494.

Abbas, S.Q. and B.C. Sutton. 1988b. *Myrotheciastrum* gen. nov., an addition to the Coelomycetes. *Trans. Br. mycol. Soc.* 91: 352-357.

Abbas, S.Q., B.C. Sutton and A. Ghaffar. 1998. *Seimatosporiella* gen. nov., an addition to Coelomycetes from Pakistan. *Pak. J. Bot.*, 30:271-278.

Ahmad, S. 1951. Fungi of West Pakistan. III. *Sydowia*, 5: 390-395.

Ahmad, S. 1962. Further contributions to the fungi of West Pakistan, II. *Biologia*, 8: 123-150.

Ahmad, S. 1964. Contributions to the fungi of West Pakistan, IV. *Biologia*, 10: 1-6.

Ahmad, S. 1971. Contributions to the fungi of West Pakistan XI. *Biologia*, 17: 67-85.

Arx, J.A. Von and F.J.J.A. Van der Velden. 1961. Das *Colletotrichum* der Gurkengewächse. *Phytopath. Z.*, 41: 228-235.

Deighton, F.C. 1976. Studies on *Cercospora* and allied genera VI *Pseudocercospora* Speg., *Pantospora* Cif., and *Cercoseptoria* Petrak. *Mycol. Pap.* (CAB, IMI) Kew 140: 1-168.

Dianese, J.C., B.C. Sutton and D.J. Tasman. 1993. Two Deuteromycetes, *Phloeosporella flavio-moralis* and *Pseudocercospora punctata* causing leaf lesions on *Eugenia* spp. *Mycol. Res.*, 97: 123-126.

Dianese, J.C., R.B. Medeiros and L.J. Santos. 1993a. *Phloeosporella kitajimae* sp. nov. associated with leaf spot and blight of *Eugenia dysenterica* in central Brazil. *Mycol. Res.*, 97: 610-612.

Dyko, B.J., B.C. Sutton and M.F. Roquebert. 1979. The genus *Prostostegia*. *Mycologia*, 71: 918-934.

Hennebert, G.L. and B.C. Sutton. 1994. Unitary parameters in conidiogenesis. In: *Ascomycete Systematics, Problems & Perspectives in the Nineties*. Plenum, New York. pp. 65-76.

Höhnel, F. Von. 1924. Beitrage zur Kenntnis der Gattung *Cylindrosporium* Grev. *Annals mycol.*, 22: 191-203.

Jafri, S.M.H. 1966. *The flora of Karachi.* The book Corporation Karachi, Pakistan, pp. 375.

Maire, R. 1949. Contributions à l'étude de la flore du Sahara occidental. Fasicule 8. *Botaniste*, 34: 293-308.

Petrak, F. and S. Ahmad. 1954. Beiträge zur Pilzflora Pakistans. *Sydowia*, 8: 162-185.

Prasad, N., R.D. Singh and G.C. Bhatnagar. 1961. Some interesting fungi on *Salvadora persica* Linn. *Proc. Nat. Inst. Sci. India* Pt.B. 27: 281-286.

Stewart, R.R. 1972. *An annotated catalogue of the vascular plants of West Pakistan and Kashmir* (Eds) E. Nasir & S.I. Ali, in The flora of West Pakistan. 1028 pp.

Sutton, B.C., A. Ghaffar and S.Q. Abbas. 1972. *Seimatosporiopsis* gen. nov. (Sphaeropsidales). *Trans. Br. mycol. Soc.* 59: 295-300.

Sutton, B.C. 1980. *The Coelomycetes* (CAB, IMI) Kew, Surrey, U.K. pp. 696.

Sutton, B.C. and S.Q. Abbas. 1986. *Aphanofalx irregularis* sp. nov., from Pakistan. *Trans. Br. mycol. Soc.*, 87: 640-642.

Sutton, B.C. and F.G. Pollack. 1974. Microfungi on *Cercocarpus*. *Mycopath. Mycol. appl.*, 52: 331-351.

Wallroth, F.G. 1833. *Fl. Crypt. Germ.*, 2: 176.

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