

Short Paper

## Two new records of Cercosporoid (Mycosphaerellaceae) from Iran

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**Abstract:** Cercosporoid fungi including the genus *Cercospora* and other morphologically similar genera are associated with leaf spot symptoms on various host plants. In this research three taxa including *Passalora cucurbiticola* (on *Cucurbita* sp.), *P. bolleana* (on *Ficus carica*), and *Pseudocercospora capsellae* (on *Capsella bursa-pastoris*, *Sinapis arvensis*) were identified. Among these, *P. cucurbiticola* and *P. capsellae* are new records for mycobiota of Iran.

**Keywords:** Cercospora-like fungi, leaf spot, taxonomy, new species

### Introduction

Cercosporoid fungi include over 30 morphologically similar anamorphic genera. In the first monograph published by Chupp (1954), almost all of the cercosporoid taxa concerned were assigned to a single genus, viz. *Cercospora* Fresen. Deighton (1967, 1973, 1976) divided many *Cercospora* species into segregate genera such as *Cercospora* Sacc., *Passalora* Fr. and *Pseudocercospora* Deighton. Crous and Braun (2003) published an annotated checklist for *Cercospora* and *Passalora* names with 5720 taxa. Braun (1995) described and illustrated many *Pseudocercospora* species in his monograph. Ershad (2009) presented a Fungus-Matrix list which included several *Cercospora* and *Cercospora*-like taxa. Recently, more Cercosporoid fungi have been considered by Iranian mycologists. Pirnia *et al.* (2010, 2012a-d) and Bicharanlou *et al.* (2013a-c) have studied cercosporoid and ramularioid fungi in the northern provinces of Iran and identified many new species

for mycobiota of Iran. Hesami *et al.* (2011, 2012) and Khodaparast *et al.* (2012) have also published new cercosporoids from Guilan province. This research was carried out in order to increase knowledge of cercosporoid species in Kohgiluyeh and boyerahmad province, Iran.

### Materials and Methods

Specimens with leaf spot symptoms from different localities of Kohgiluyeh and Boyerahmad province were collected and examined during spring-autumn 2012-13. Microscopic slides were prepared from stromata, conidiophores and conidia in 50% lactic acid. Characters such as, presence or absence of stromata and their development, pigmentation of conidia, conidiophores, conidiogenous loci (scars) and conidiogenous cells were used to identify the species. Measurement of fungal structures were done using Pixe LINKu scope program. Drawings were made using CorelDraw Graphics suite X3 software.

### Results and Discussion

Three taxa including two *Passalora* and one *Pseudocercospora* species, which two of them are new records for Iranian mycobiota,

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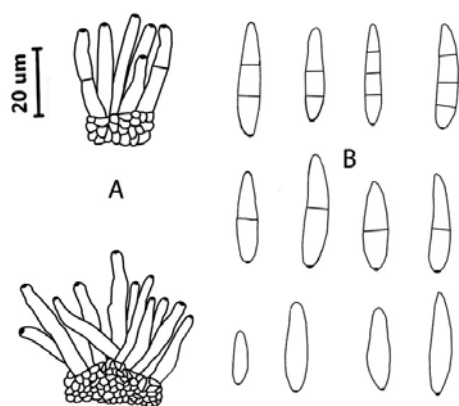
were identified. All specimens are deposited in the fungus reference of Iranian Ministry of Agriculture "IRAN" at the Iranian Research Institute of Plant Protection.

***Passalora cucurbiticola*** (Henn.) U. Braun & Crous, *Mycosphaerella* and its anamorphs. Names published in *Cercospora* and *Passalora*: 147 (2003)

Specimen examined: on *Cucurbita* sp., Kohgiluyeh and Boyerahmad Province, Gachsaran (Marin), 8 Oct. 2012, coll.: Behrooz (IRAN 16515 F).

Leaf spots circular, gray, 1-5 mm in diameter; caespituli amphigenous, mostly epiphyllous; stromata small, dark brown, 22-40  $\mu\text{m}$  wide; conidiophores fasciculate, 3-8 stalks, brown and attenuated towards the tip, erect, not branched, 0-1 septate, (20-) 25-50 (-60)  $\times$  4-5 (-6.5)  $\mu\text{m}$ ; conidiogenous loci conspicuous, terminal, scars thickened and darkened; Conidia cylindrical, fusiform, sub-hyaline to pale-olivaceous, smooth, 1-3 septate, base rounded to subtruncate, tip obtuse, (15-) 20-32  $\times$  (5.5-) 6-7  $\mu\text{m}$ ; hilum slightly thickened and darkened (Fig. 1)

Notes: Chupp (1954) introduced *Cercospora cucurbiticola* Henn., because of its morphological features, Crous and Braun (2003) re-disposed the taxon into *Passalora*. This is the first report of *P. cucurbiticola* in Iran.



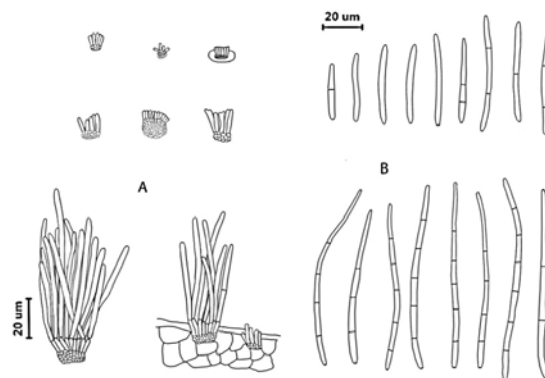
**Figure 1** *Passalora cucurbiticola* on *Cucurbita* sp. (A) stromata and conidiophores (B) conidia.

***Pseudocercospora capsellae*** (Ellis & Everh.) Deighton, Mycological Papers 133: 42 (1973)

Specimens examined: on *Capsella bursa-pastoris* L., Kohgiluyeh and Boyerahmad Province, Basht (Khan-Ahmad), 9 Apr. 2014, coll.: Behrooz (IRAN 16516 F); on *Sinapis arvensis* L., Kohgiluyeh and Boyerahmad Province, Basht (Khan-Ahmad), 10 Apr. 2014, coll.: Behrooz (IRAN 16517 F).

Leaf spots subcircular to irregular, brownish to grayish white, 3-12 mm in diameter; caespituli amphigenous, stromata small to well-developed, hyaline, 10-65  $\mu\text{m}$ ; Conidiophores solitary or in dense fascicles, hyaline, continuous, smooth, 5-12  $\times$  2.2-3.6  $\mu\text{m}$ ; conidial scars inconspicuous, unthickened; conidia solitary, colorless, straight to curved or flexuous, subcylindric to slightly obclavate, smooth, 0-6 septate, (24-) 30-100 (-110)  $\times$  2-3.5  $\mu\text{m}$ ; apex obtuse to subacute, base truncate, unthickened (Fig. 2).

Notes: This is the first report of the species from Iran. *P. capsellae* is characterized by having colorless structures as well as unthickened conidiogenous loci.



**Figure 2** *Pseudocercospora capsellae* on *Sinapis arvensis* (A) stromata and conidiophores (B) conidia.

***Passalora bolleana*** (Thum.) U. Braun, Mycotaxon 55: 228. (1995)

Specimen examined: on *Ficus carica* L., Kohgiluyeh and Boyerahmad Province, Gachsaran (spar), 7 Jul. 2012, coll.: Behrooz (IRAN 16518 F).

Notes: The species has already been reported from other parts of Iran (Ershad, 2009), but is new to mycoflora of Kohgiluyeh and Boyer-Ahmad province.

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## گزارش جدید دو گونه سرکوسپوروئید (Mycosphaerellaceae) از ایران

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**چکیده:** قارچ‌های سرکوسپوروئید شامل جنس *Cercospora* و سایر جنس‌های با خصوصیات ریخت‌شناسی مشابه، مرتبط با علائم لکه برگ‌ی روی گیاهان میزبان مختلفی هستند. در این تحقیق سه آرایه شامل *Passalora cucurbiticola* (روی *Cucurbita* sp.)، *P. bolleana* (روی *Ficus carica*)، و *Pseudocercospora capsellae* (روی *Capsella bursa-pastoris*, *Sinapis arvensis*) شناسایی شدند. از بین آنها *Passalora cucurbiticola* و *Pseudocercospora capsellae* برای میکوبیوتای ایران جدید هستند.

**واژگان کلیدی:** قارچ‌های شبه سرکوسپورا، لکه برگ‌ی، تاکسونومی، گونه جدید