Mycologia Iranica 1(2): 65 – 74, 2014 Original Article

Additions and corrections to names published in *Cercospora* in Iran

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Abstract: In this paper, the taxonomy of some previously reported taxa as *Cercospora apii* s. lat. in Iran is discussed and some new records are listed. *Cercospora* species on *Abelia grandiflora* (*C. deutziae*), *Erythrina crista-galli* (*C. erythrinicola*), *Euphorbia heterophylla* (*C. pulcherrimae*) and *Zanthedeschia aethiopica* (*C. richardiicola*) are new for mycobiota of Iran. *Cercospora iridis* which has been previously reported from Iran probably belongs to the genus *Passalora*, but more specimens should be examined for final conclusion.

Key words: Taxonomy, anamorphic fungus, leaf spotting pathogen, new record

INTRODUCTION

Cercospora Fresen. is one of the largest genera among cercosporoid fungi and its species are associated with leaf spots and considered as important pathogens on various host plants. (Crous & Braun 2003). Chupp (1954), who adopted a broad generic concept listed over 1800 species. By careful morphological examination of *Cercospora* and similar taxa, Deighton (1973, 1976) segregated and introduced new genera. Crous & Braun (2003) published an annotated list of *Cercospora* and *Passalora* names with more than 5700 taxa. Recently, Ershad (2009) corrected 59 names in *Cercospora* previously published from Iran, but he did not follow to synonymize morphologically indistinguishable taxa in *Cercospora apii* s. lat. Study on *Cercospora* and allied genera is more considered in recent years in Iran.

Pirnia et al. (2012 a, b, c, d) identified new species of cercosporoids from the north of Iran. Hesami et al. (2011, 2012) introduced new *Cercospora* and *Cercospora*-like species from Guilan province. Recently, Bicharanlou et al (2013 a, b, c) and Behrooz et al. (2015) reported new cercosporoid species from Mazandaran and Kohgiluyeh and Boyer-Ahmad Provinces, respectively.

MATERIALS AND METHODS

Specimens from the north of Iran (Guilan, Mazandaran, Golestan and Ardabil provinces) and all specimens belonging to *Cercospora* deposited in fungal reference collection of Ministry of Jihad-e-Agriculture "IRAN" in Iranian Research Institute of Plant Protection were morphologically re-examined. Microscopic slides were prepared from stromata, conidiophores and conidia in 25% lactic acid. Characters such as pigmentation, shape and dimension of conidia and conidiophores and thickness and darkness of conidial scars and hila were studied. Drawings were made using a drawing-tube attached to an Olympus BH2 microscope.

RESULTS AND DISCUSSION

According to Crous & Braun (2003), some taxa in the genus *Cercospora* on various host plants are morphologically indistinguishable. Therefore, they proposed *Cercospora apii* s. lat. for those taxa and linked 83 host genera to the latter species. Pirnia et al. (2010) and Bicharanlou et al. (2013a) followed Crous & Braun (2003) and linked 19 hosts with *C. apii* s. lat. based on Braun's idea this proposal is a temporary solution for *Cercospora apii* species complex and new molecular evidences are needed to confirm it, therefore previous valid names are acceptable as separate species. In this research, the taxa which previously placed in *Cercospora apii* s. lat. were re-examined and segregated on various hosts based on morphological characters. *Cercospora* species on *Abelia grandiflora* L. (*C. deutziae* Ellis & Everh.), *Erythrina crista-galli* L. (*C. erythrinicola* Tharp), *Euphorbia heterophylla* L. (*C. pulcherrimae* Tharp) and *Zanthedeschia aethiopica* (L.) Spreng. (*C. richardiicola* G.F. Atk.) are new records for mycobiota of Iran. *Cercospora althaeina* Sacc. (on *Gossypium hirsutum* Cav.), *C. avicennae* Chupp (on *Abutioln theophrasti* Medic.), *C. beticola* Sacc. (on *Beta vulgaris* L.), *C. bizzozeriana* Sacc. & Berl. (on *Cardaria draba* (L.) Desv.), *C. brunkii* Ellis & Galloway (on *Pelargonium zonale* (L.) L Her. ex Ait), *C. canescens* Ellis & G. Martin (on *Vigna sinensis* (L.) Endl.), *C. caricis* Oudem. (on *Carex orbicularis* Boott.), *C. gerberae* Chupp & Viegas (on *Gerbera jamesonii* Hook), *C. hydrangeae* Ellis & Everh. (on *Hydrangea macrophylla* (Thunb.) Ser.),

Submitted 18 January 2014, accepted for Publication 1 June 2014
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C. lactucae-sativae Sawada (on *Lactuca serriola* L.), *C. peckiana* Chupp (on *Rumex crispus* L., *R. sanguineus* L.), *C. physalidis* Ellis (on *Lycopersicon esculentum* Mill.), *C. sonchi* Chupp (on *Sonchus arvensis* L.), *C. zebrina* Pass. (on *Medicago* sp.) and *C. zonata* G. Winter (on *Vicia faba* L.) were identified on the specimens collected from the northern provinces of Iran. Other morphologically similar *Cercospora* species listed by Ershad (2009) on *Gerbera jamesonii* (*C. gerberae*), *Glycine max* L. (*C. kikuchii* T. Matsumoto & Tomoy.), *Hibiscus esculentus* L. (*C. malayensis* Stev. & Solh.), *Hydrangea hortensia* L. (*C. hydrangeae*), *Impatiens balsamina* L. (*C. fukushiana* (Mat.) Yam.), *Medicago* sp. (*C. medicaginis* Ellis & Everh.), *Petunia hybrida* Wilm. (*C. physalidis* Ellis) and *Vigna sinensis* (*C. canescens*) proved to be the correct names according to morphological descriptions provided in Chupp (1954). *Cercospora iridis* which was previously reported from Iran (Pirnia et al. 2010), probably belongs to the genus *Passalora*, but the amount of the specimen was not sufficient for the exact identification. All specimens are deposited in "IRAN".

Key to *Cercospora* species reported from Iran

1. Species occurs on *Compositae*……10
2. Species occurs on *Leguminosae*……...15
3. Species occurs on *Cruciferae*……...21
4. Species occurs on *Malvaceae*……...23
5. Species occurs on *Euphorbiaceae*……25
6. Species occurs on *Polygonaceae*……..27
7. Species occurs on *Solanaceae*……..29
8. Species occurs on *Amaranthaceae*……...30
9. Species occurs on other plant families……31
10 a. Length of conidiophores up to 150 µm, length of conidia up to 200 µm…… 11
b. Length of conidiophores up to 125 µm, length of conidia up to 150 µm…… 12
11 a. On *Xanthium*……*C. xanthiicola*
b. On *Sonchus* and *Taraxacum* …… *C. sonchi*
12 a. Conidiophores branched, on *Zinnia*.....*C. zinnia*
b. Conidiophores unbranched, on other hosts….13
13 a. Conidiophores tortuous to multi-geniculate, on *Helianthus*……*C. helianthiicola*
b. Conidiophores sinuous or 1-3 geniculate, on *Gerbera*……...14
14 a. Tip of conidia subacute, on *Lactuca*…….. ……*C. lactucae-sativae*
b. Tip of conidia acute, on *Gerbera* … *C. gerberae*
15 a. Maximum length of conidia less than 150 µm…16
b. Maximum length of conidia more than 150 µm...18
16 a. Conidia acicular, on *Medicago* and *Trifolium* ……*C. zebrina*
b. Conidia cylindric to cylindro-obclavate …... 17
17 a. Conidial scars terminal, on *Trigonella* …… …… *C. traversiana*
b. Conidial scars terminal and lateral, on *Vicia*… …… *C. zonata*
18 a. Length of conidiophores up to 175 µm …….. 19
b. Length of conidiophores up to 250 µm……...20
19 a. Conidiophores uniform in color and width, on *Medicago*……*C. medicaginis*
b. Conidiophores paler and narrower towards the tip, on *Vigna*……*C. canescens*
20 a. Length of conidia up to 200 µm, on *Erythrina* … …… *C. erythrinicola*
b. Length of conidia up to 300 µm or more, on *Glycin* ……*C. kikuchii*
21 a. Conidia acicular, on *Raphanus*…*C. cruciferarum*
b. Conidia cylindrical to cylindro-obclavate..….22
22 a. Tip of conidia bluntly rounded, on *Cardaria*…… ……*C. bizzozeriana*
b. Tip of conidia subobtuse, on *Cheiranthus*…… ……...*C. cheiranthi*
23 a. Conidiophores up to 100 µm, conidia mostly cylindric, on *Althaea* and *Gossypium*…*C. althaeina*
b. Conidiophores up to 250 µm, conidia acicula...24
24 a. Length of conidia up to 150 µm, on *Hibiscus* ……*C. malayensis*
b. Length of conidia up to 200 µm, on *Abutilon* ……...*C. avicennae*
25 a. Conidiophores 0-septate, branched in the upper part, on *Mercurialis*……*C. mercurialis*
b. Conidiophores septate, not branched… … ….26
26 a. Length of conidiophores up to 150 µm or longer, on *Euphorbia*……*C. pulcherrimae*
b. Length of conidiophores up to 100 µm, on *Ricinus*……*C. ricinella*
27 a. Length of conidiophores and conidia up to 250 µm or longer, on *Rumex*……*C. apii*
b. Length of conidiophores mostly up to 100 µm, conidia shorter……28
28 a. Stromata present, 50–75 µm in diam., fascicles dense to very dense……*C. peckiana*
b. Stromata lacking or composed of few cells, fascicles not dense……*C. rumicis*
29 a. Length of conidiophores and conidia up to 100 and 150 µm respectively, on *Daturea*…*C. daturicola*
b. Length of conidiophores and conidia up to 250 µm, on *Lycopersicon* and *Petunia*…..*C. physalidis*
30 a. Fascicles compact, length of conidiophores and conidia up to 100 µm, on *Amaranthus*...*C. acnidae*
b. Fascicles divergent, length of conidiophores and conidia up to 200 µm, on *Amaranthus*…… ……...*C. brachiata*
31 a. Maximum Length of conidiophores mostly up to 100 µm, sometimes up to 150 µm……...32
b. Maximum length of conidiophores more than 150 µm……...41
32 a. Conidia cylindro-obclavate…… ……....33
b. Conidia acicular……...34
33 a. Fascicles compact in basal part, conidiophores unicellular; on *Datisca*……*C. datiscicola*
b. Fascicles divergent, conidiophores rarely septate, on *Carex*……*C. caricis*
34 a. Length of conidia up to 200, on *Beta* and *Spinacia*……*C. beticola*
b. Length of conidia mostly up to 150 µm or shorter……..…35
35 a. Stromata distinct..…….……36

b. Stromata lacking or small, composed of few cells……37
36 a. Conidiophores uniform in width and color; on *Hosta*……*C. hostae*
b. Conidiophores slightly paler and narrow towards the tip, on *Sorghum* ……*C. sorghi*
37 a. Conidiophores uniform in color and width, on *Hydrangea*……*C. hydrangeae*
b. Conidiophores paler and fairly narrower towards the tip……38
38 a. Conidial scars numerous, terminal and lateral…39
b. Conidial scars infrequent, mostly terminal…..40
39 a. Conidiophores sub-hyaline to very pale olivaceous brown, on *Plantago*……*C. pantoleuca*
b. Conidiophores brown in basal part, paler towards the tip, on *Viola*……*C. violae*
40 a. Stromata black to dark brown, conidiophores not branched, on *Fraxinus*……*C. texensis*
b. Stromata, brown, conidiophores rarely branched, on *Elaeagnus*……*C. elaeagni*
41 a. Conidiophores not geniculate or rarely geniculate, on *Pelargonium*……*C. brunkii*
b. Conidiophores geniculate to sinuous……42
42 a. Maximum length of conidia up to 150 µm…..43
b. Maximum length of conidia more than 150 µm...45
43 a. Conidia obclavate, tip of conidia bluntly rounded, on *Heliotropium*……*C. taurica*
b. Conidia acicular……44
44 a. Tip of conidia acute, on *Phytolacca…C. flagellaris*
b. Tip of conidia subobtuse, on *Abelia…C. deutziae*
45 a. Length of conidia up to 200 µm, on *Cucurbita*……*C. citrullina*
b. Length of conidia up to 300 µm, on *Zanthedeschia*……*C. richardiicola*

***Cercospora deutziae* Ellis & Everh. J. Mycol. 4: 5 (1888)**

Leaf spots circular, center greyish-white, 1.5–4.5 mm in diameter; stromata lacking or composed of a few brown cells, 20–30 µm wide; caespituli epiphyllous; conidiophores in small fascicles, medium dark brown, uniform in color, not branched, septate, 30–200 × 3–5 µm; conidial scars conspicuous, thickened and darkened, terminal and lateral; conidia hyaline, acicular to cylindrical, multiseptate, base truncate, tip subobtuse, 30–125 × 2.5–5 µm; hilum thickened and darkened (Fig. 1).

Specimen examined: IRAN, Mazandaran Province, Nowshahr, on *Abelia grandiflora*, 29 Oct. 2012, B. Bicharanlou (IRAN 16192 F).

Note**:** This specimen was previously reported as *C. apii* by Bicharanlou et al. (2013b). Morphology of the specimen examined agrees with description of *C. deutziae* provided by Chupp (1954). The species is distinguished from *C. apii* s. lat. by having moderately shorter conidiophores and conidia.

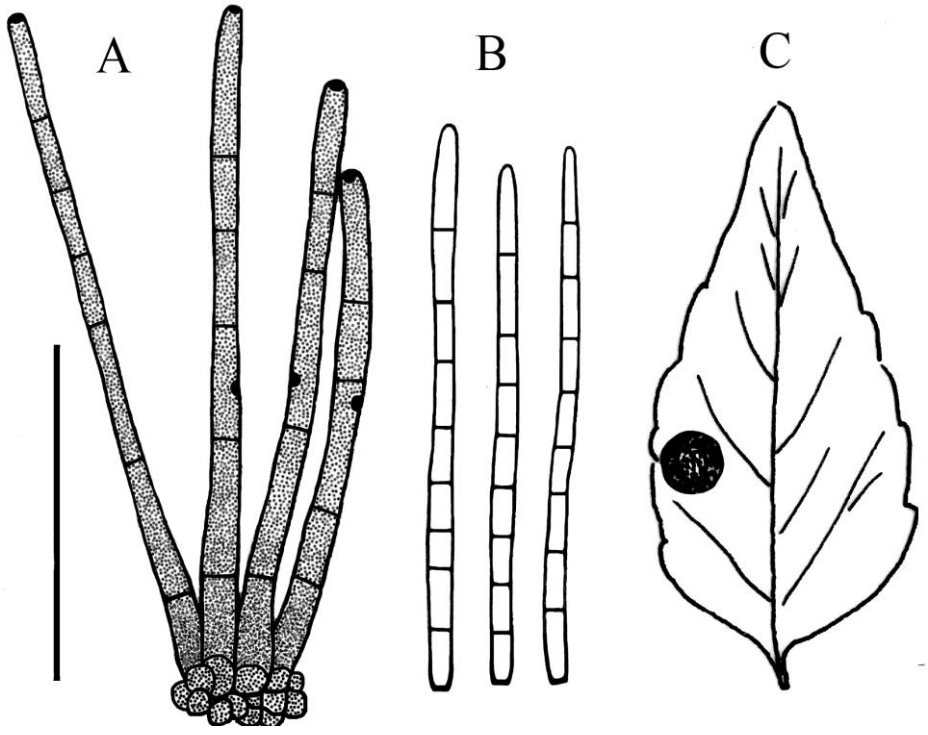

Fig. 1. *Cercospora deutziae* on *Abelia grandiflora*. (**A)** Conidiophores, (**B)** Conidia, (**C)** Symptoms on leaf, scale bar = 50 µm.

Cercospora erythrinicola **Tharp, Mycologia 9: 109 (1917)**

Leaf spots circular to subcircular, greyish white, 1–3 mm in diameter; stromata lacking or composed of a few brown cells, 30–50 µm wide; caespituli amphigenous, mostly epiphyllous; conidiophores pale brown, paler and narrower towards the tip, not branched, septate, 20–125 × 3–5 µm; conidial scars conspicuous, thickened and darkened, terminal and lateral; conidia hyaline, acicular, straight to curved, multiseptate, base truncate, tip acute to subacute, 40–175 × 3–4 µm; hilum thickened and darkened (Fig. 2).

Specimens examined: IRAN, Mazandaran Province, Nowshahr, on *Erythrina crista-galli*, 9 Oct. 2012., B. Bicharanlou (IRAN 16197 F).

Note**:** Specimen on above mentioned host was previously reported as *C. apii* by Bicharanlou et al. (2013b)**.** In this species, fascicles were moderately dense and some conidiophores were sparingly sinuous to 1-3 geniculate and conidia were moderately shorter than 150 µm. These characters distinguish the species from *C. apii* s. lat. and fit well with description of *C. erythrinicola* in Chupp (1954).

Cercospora pulcherrimae **Tharp, Mycologia 9: 114 (1917)**

Leaf spots circular to subcircular, 1–3 mm in diameter; stromata composed of a few brown cells, 30–40 µm wide; caespituli amphigenous, mostly epiphyllous; conidiophores olivaceous brown, paler and narrower towards the tip, not branched, septate, 20–150 × 4–6 µm; conidial scars conspicuous, thickened and darkened, terminal and lateral; conidia hyaline, acicular, straight to curved, multiseptate, base truncate, tip subacute, 40–125 × 2.5–4 µm; hilum thickened and darkened (Fig. 3).

Specimens examined: IRAN, Golestan Province, Gorgan, on *Euphorbia heterophylla*, 10 Nov. 2010, M. Pirnia & R. Zare (IRAN 15018 F).

Note**:** This specimen was previously reported as *C. apii* by Pirnia et al. (2010). Moderately short conidiophores and conidia separate the species from *C. apii* s. lat., and hyaline acicular conidia separate *C. pulcherrimae* from the others on *Euphorbia* (Chupp 1954).

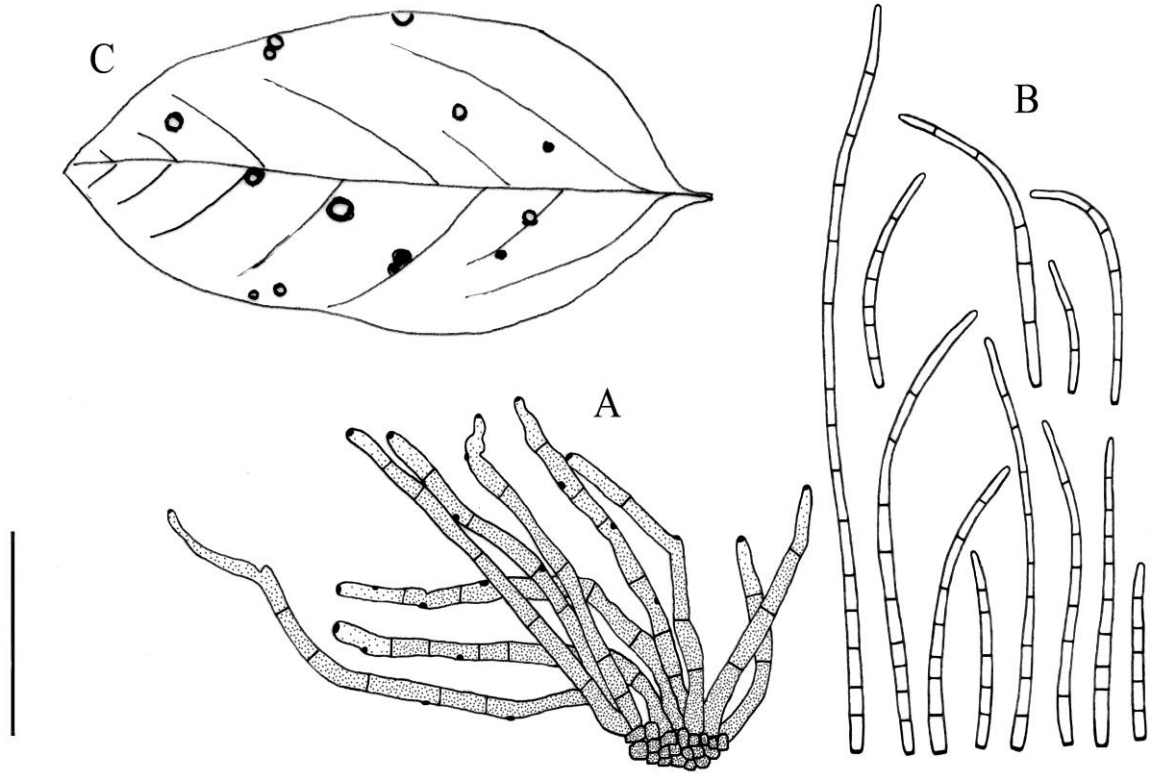

Fig. 2. *Cercospora erythrinicola* on *Erythrina crista-galli*. (**A)** Conidiophores, (**B)** Conidia, (**C)** Symptoms on leaf, scale bar = 50 µm.

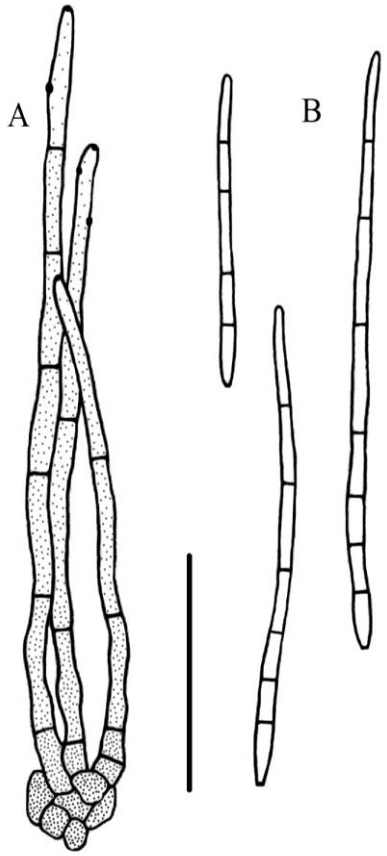

Fig. 3. *Cercospora pulcherrimae* on *Euphorbia heterophylla*. (**A)** Conidiophores, (**B)** Conidia, scale bar = 50 µm.

***Cercospora richardiicola* G. F. Atk. (richardiaecola), J. Elisha Mitchell Sci. Soc. 8: 51. (1892)**

Leaf spots circular to subcircular, center greyish white, with narrow dark brown margin, 1–12 mm. in diameter; stromata present, small to moderately developed, 25–40 µm wide, brown; caespituli amphigenous, mostly hypophyllous, punctiform, conidiophores in small fascicles, arising from stromata, pale to olivaceous brown, paler towards the tip, erect, geniculate to sinuous in the upper part, not branched, 77–130 × 4–7 µm, septate; conidiogenous cells integrated, terminal; conidial scars conspicuous, thickened and darkened, terminal and lateral; c*onidia* hyaline, acicular, straight to curve, multiseptate, 8–12 transverse septa, 95–160 × (2.5-)3–4 µm, base truncate, tip acute; hilum thickened and darkened (Fig. 4).

Specimen examined: IRAN, Guilan Province, Some'e-Sara, on *Zanthedeschia aethiopica*, 15 July. 2007, A. Khodaparast (IRAN 14807 F).

Note**:** This specimen was previously reported as *C. apii* by Pirnia et al. (2010). Morphology of the specimen agrees with the description of *C. richardiaecola* given by Chupp (1954). The species was originally published as *C. richardiaecola*, which is corrected to *C. richardiicola* in this study, according to Crous & Braun (2003). The species is somehow morphologically close to *C. callae*, but the latter species can be distinguished by its obclavate, shorter and wider conidia.

***Cercospora bizzozeriana* Sacc. & Berl., Malpighia 2: 248. (1888)**

Specimens examined: IRAN, Yazd Province, Taft, on *Cardaria draba*, 8 May 2010. Khorramnejad (IRAN 15488 F); Northern-Khorasan province, Shirvan, 3 July 2011. B. Bicharanlou (IRAN 15489 F).

Note**:** The species is characterized by having obclavate to cylindrical conidia and moderately short conidiophores, which was listed by Pirnia et al. (2012a) for the first time from Iran.

***Cercospora caricis* Oudem., Nederl. Kruidk. Arch. II, 6: 59. (1892)**

Specimen examined: IRAN, Ardabil Province, Neur Lake, on *Carex orbicularis*, 22 May 2011. Javadi-Estahbanati (IRAN 15490 F).

Note**:** Chupp (1954) introduced *Cercospora caricis* on various species of the genus *Carex*. The species is characterized by having short conidiophores and acicular to cylindro-obclavate conidia, and was listed by Pirnia et al. (2012a) for the first time from Iran.

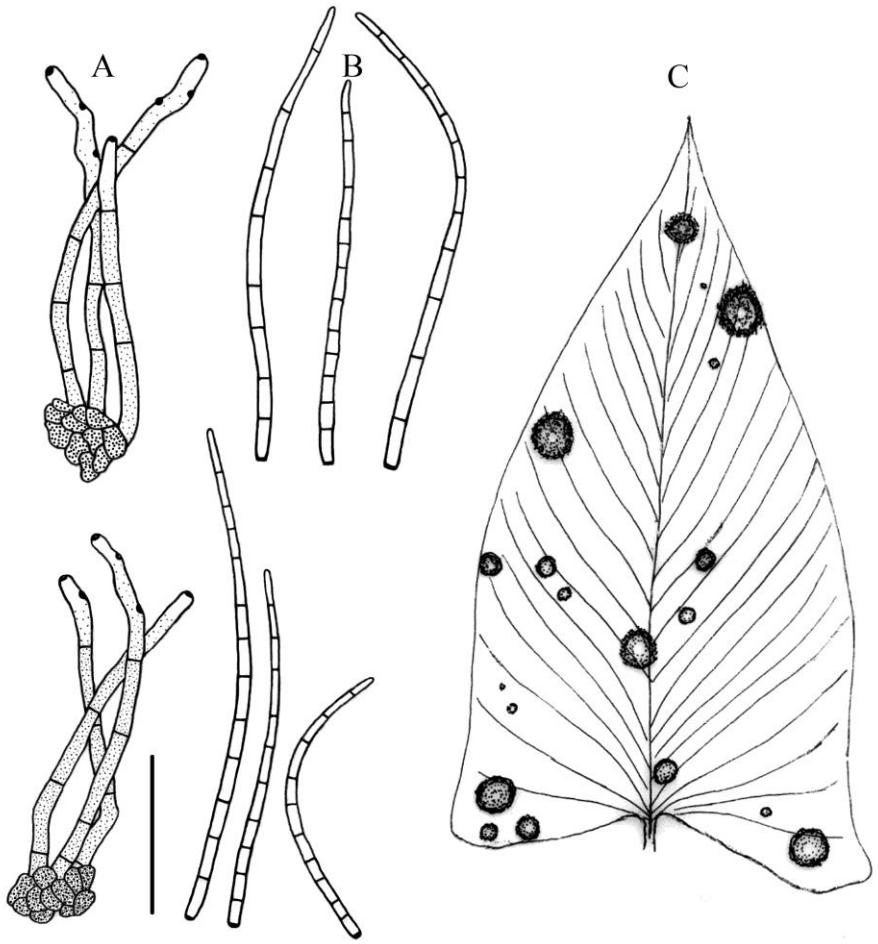

Fig. 4. *Cercospora richardiicola* on *Zanthedeschia aethiopica*. (**A)** Conidiophores, (**B)** Conidia, (**C)** Symptoms on leaf, scale bar = 50 µm.

***Cercospora peckiana* Chupp, A monograph of the fungus genus *Cercospora*: 449 (1954)**

Specimens examined: IRAN, Golestan Province, Gorgan (Jahan Abad village), on *Rumex sanguineus*, 13 May 2011. M. Pirnia (IRAN 15493 F); Golestan Province, Gorgan, on *Rumex crispus*, 10 May 2010. M. Pirnia (IRAN 15495 F); Golestan Province, Gorgan, Tuskestan Forest, 9 Nov. 2010. M. Pirnia & R. Zare (IRAN 15494 F).

Note**:** The species is morphologically similar to *Cercospora apii*, but differs by moderately short conidiophores and conidia as well as obclavate-cylindrical conidia and was listed by Pirnia et al. (2012a) for the first time from Iran.

***Cercospora althaeina* Sacc., Michelia 1: 296. (1878)**

Specimen examined: IRAN, Golestan Province, Gorgan, on *Gossypium hirsutum*, Date unknown, Mirsalavatian (IRAN 4650 F).

Note: *Ramularia areola* was previously reported from the same specimen in Iran (Ershad 2009). Careful examination of the specimen showed that some leaves were infected by *Cercospora althaeina*, which was previously reported on *Althaea rosea* Cav. in Iran.

***Cercospora avicennae* Chupp, A monograph of the fungus genus *Cercospora*: 369 (1954)**

Specimen examined: IRAN, Golestan Province, Shastkola forest, on *Abutilon theophrasti*, 8 Nov. 2010, M. Pirnia & R. Zare (IRAN 15016 F).

Note**:** This specimen was previously reported as *C. apii* by Pirnia et al. (2010). Morphological characteristics of the specimen examined agree well with description of *C. avicennae* in Chupp (1954).

***Cercospora beticola* Sacc., Nuovo Giorn. Bot. Ital. 8: 189. (1876)**

Specimens examined: IRAN, Golestan Province, Gorgan, on *Beta vulgaris*, 13 May 2011, M. Pirnia (IRAN 15487 F); Mazandaran Province, Gharakhil Station, 15 Nov. 1967, Rahmani (IRAN 432 F);

Ardabil Province, Khoy, May 1967, Asadi (IRAN 434 F); Khuzestan Province, Dezful, Safi-Abad, date unknown, Eslami (IRAN 435 F); Farah-Abad, 7 Apr. 1949. (IRAN 436 F); Guilan Province, Lahijan, 15 Aug. 1950. (IRAN 437 F); West-Azarbaijan Province, Urmia, (Rezaieh), 16 Aug. 1996, Djawanmoghadam (IRAN 438 F); Mazandaran Province, Khorram-Abad, Shahsavar, 18 June 1955, Gh. Scharif (IRAN 439 F); Fars Province, Kazerun, 13 May 1969, Ahmadinejad (IRAN 440 F); North-Khorasan Province, Bojnurd, 16 Nov. 1969., Ahmadinejad (IRAN 441 F); Khuzestan Province, Ahvaz, date unknown, E. Esfandiari (IRAN 442 F); Golestan Province, Gorgan, 20 Apr. 1947, Mirsalavatian (IRAN 443 F); Guilan Province, Rasht, 3 Aug. 1947, E. Esfandiari (IRAN 444 F); Khuzestan Province, Ahvaz, on *Beta maritime* L., 9 Feb. 1971, Ebrahimi (IRAN 433 F).

Note**:** According to Chupp (1954), *C. beticola* is characterized by moderately short conidiophores. Crous & Braun (2003) synonymized *C. beticola* under *C. apii* s. lat., but Groenewald et al. (2006) showed that both *C. apii* and *C. beticola* had wider host ranges and represented distinct species. Iranian specimens are classified under *C. beticola*, but it is probable that some specimens in Iran are infected by *C. apii* s. lat.

Cercospora brunkii **Ellis & Galoway, J. Mycol. 6: 33. (1890)**

Specimens examined: IRAN, Guilan Province, Sume'e Sara, on *Pelargonium zonale*, 25 June 2010, M. Pirnia (IRAN 15020 F); Mazandaran Province, Mahmoudabad, 16 Aug. 2012, B. Bicharanlou (IRAN 16201 F).

Note**:** Specimens from Guilan and Mazandaran provinces were previously reported as *C. apii* by Pirnia et al. (2010) and Bicharanlou et al. (2013b). *C. brunkii* is a common name on *Pelargonium* and *Geranium* (Geraniaceae). The species is characterized by having moderately shorter conidiophores and short acicular to obclavate conidia.

Cercospora canescens **Fresen., Beitr. Mycol. 3: 91 (1863)**

Specimens examined: IRAN, Guilan Province, Rasht, on *Vigna sinensis*, 25 July 2010, M. Pirnia (IRAN 15486 F); Guilan Province, Astaneh-Ashrafieh, 24 June 2010, M. Pirnia (IRAN 14808 F); Guilan Province, Sume'e Sara, 25 June 2010, M. Pirnia (IRAN 15021 F); Mazandaran Province, Babol, 12 Sept. 2010, M.A. Aghajani (IRAN 15022 F), Guilan Province, Rasht, 28 Aug. 1974, Gh. Scharif (IRAN 454 F).

Note**:** Specimens on above mentioned host from Guilan province were previously reported as *C. apii* by Pirnia et al. (2010). There are three *Cercospora* species on *Vigna* spp., which are morphologically distinguishable from each other, including *C. canescens* (Pale brown conidiophores and long acicular conidia), *C. kikuchii* T. Matsumoto & Tomoy. (Darker colored conidiophores in dense fascicles and shorter conidia) and *C. longispora* Peck. (Pale olivaceous brown conidiophores and colored conidia).

Cercospora gerberae **Chupp & Viegas, Bol. Soc. Brasil. Agron. 8: 27. (1945)**

Specimens examined: IRAN, Mazandaran Province, Mahmoudabad, on *Gerbera jamesonii*, 29 Sept. 2012, B. Bicharanlou (IRAN 16198 F); Mazandaran Province, close to Motel Ghou, 3 Oct. 1965. (IRAN 468 F).

Note**:** The specimen from Mahmoudabad was previously reported as *C. apii* by Bicharanlou et al. (2013b), but moderately shorter conidiophores and conidia separate *C. gerberae* from *C. apii* s. lat. Morphology of the specimen examined fit well with description of *C. gerberae* in Chupp (1954).

Cercospora hydrangeae **Ellis & Everh., J. Elisha Mitchell Sci. Soc. 8: 52. (1892)**

Specimen examined: IRAN, Mazandaran Province, Nowshahr, on *Hydrangea macrophylla*, 14 July 2012. B. Bicharanlou (IRAN 16200 F).

Note**:** This specimen was previously reported as *C. apii* by Bicharanlou et al. (2013b). Morphology of the specimen examined is identical with description of *C. hydrangeae* in Chupp (1954). Two species of *Cercospora*, including *C. hydrangea* and *C. yakushimensis* Togashi & Katsuki are reported on *Hydrangea*. The latter species is distinguishable by having shorter conidiophores and conidia.

Cercospora iridis **Chupp, A monograph of the fungus genus Cercospora: 260 (1954)**

Specimen examined: IRAN, Guilan Province, Bandar Anzali, on *Iris* sp., 25 June 2010, M. Pirnia (IRAN 15025 F)

Note**:** Studying a specimen on *Iris* sp., Pirnia et al. 2010 introduced *Cercospora iridis* with short cylindro-obclavate conidia and small conidiophores. Careful microscopic examination showed that fungal structures and conidiogenous loci were very close to the genus *Passalora*. Unfortunately, the amount of the specimen was not sufficient for the exact identification, and more specimens need to be investigated.

Cercospora lactucae-sativae **Sawada, Rep. Gov. Agric. Res. Inst. Taiwan 35: 111 (1928)**

Specimens examined: Iran, Mazandaran Province, Sari, on *Lactuca serriola*, 12 May 2011, M. Pirnia (IRAN 15491 F); Northern-Khorasan Province, Shirvan, 3 July 2011, B. Bicharanlou (IRAN 15492 F).

Note**:** *Cercospora lactucae-sativae* was previously reported on *Lactuca sativa* L. (Pirnia et al. 2010). Old collections from Iran are published as *Cercospora longissima* Cugini ex Sacc., but Crous & Braun (2003) replaced *C. longissima* by *C. lactucae-sativae* as its synonym.

***Cercospora medicaginis* Ellis & Everh., Proc. Acad. Nat. Sci. Philadelphia 43: 91. (1891)**

Specimen examined: IRAN, Ahoudasht, on *Medicago* sp. 10 Mar. 1948, E Esfandiari (IRAN 469 F).

Note**:** Conidiophores were pale olivaceous brown, paler and narrower towards the tip. Average range of conidiophores and conidial size was more than *C. zebrina* on *Medicago* in this research.

***Cercospora physalidis* Ellis Amer. Naturalist 16: 810 (1882)**

Specimens examined: Iran, Guilan Province, Astaneh-Ashrafieh, on *Lycopersicon esculentum*, 24 June 2010, M. Pirnia (IRAN 15019 F); Guilan Province, on *Petunia hybrida*, 23 Aug. 1973, Akhavizadegan (IRAN 475 F).

Note**:** Specimen on *Lycopersicon esculentum* was previously reported as *C. apii* by Pirnia et al. (2010). *C. physalidis* is a common species on various genera of *Solanaceae* (Crous & Braun 2003). Morphological characteristics of the two examined specimens agree with description of *C. physalidis* represented by Chupp (1954).

***Cercospora sonchi* Chupp, A monograph of the fungus genus *Cercospora*: 159 (1954)**

Specimen examined: IRAN, Mazandaran province, Sari, on *Sonchus arvensis*, 19 Nov. 2012, B. Bicharanlou (IRAN 16202 F).

Note**:** This specimen was previously reported as *C. apii* by Bicharanlou et al. (2013b). *C. sonchi* was previously reported by Hesami et al. (2012) on *Taraxacum officinalis* in Iran, but this is the first report of the species on *Sonchus arvensis*.

***Cercospora zebrina* Pass., Hedwigia 16: 124. (1877)**

Specimen examined: IRAN, Lorestan Province, Khorram-Abad, on *Medicago* sp., 14 April 2010, Naemifar (IRAN 15496 F).

Note**:** *C. zebrina* is a common species on *Trifolium* spp., but has been also found on *Medicago* spp. The species is characterized by having short pale to medium dark olivaceous brown conidiophores which are uniform in color and moderately short acicular conidia.

***Cercospora zonata* G. Winter, Hedwigia 23: 191 (1884)**

Specimens examined: IRAN, Golestan Province, Gorgan, on *Vicia faba* L., 13 May 2011, M. Pirnia (IRAN 15497 F); Khuzestan Province, Ahvaz, Hamidieh, 24 Mar. 1948, E. Esfandiari (IRAN 466 F); Mazandaran Province, Babol, Hamzeh-Cola, 12 Feb. 1983, Torabi (IRAN 467 F).

Note**:** The species is characterized by having moderately wide and short conidiophores with wide obclavate to cylindrical conidia.

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اطلاعات جدید و اصلاحات در نام های چاپ شده در جنس *Cercospora* در ایران

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چکیده: در این مقاله، تاکسونومی برخی آرایه‌های از پیش معرفی شده با نام *Cercospora apii* s. l. در ایران مورد بحث قرار گرفته است و تعدادی آرایه جدید فهرست شده‌اند. گونه‌های *Cercospora* روی میزبان های *Abelia grandiflora* (*C. deutziae*)، *Erythrina crista-galli* (*C. erythrinicola*)، *Euphorbia heterophylla* (*C. pulcherrimae*) و *Zanthedeschia aethiopica* (*C. richardiicola*) رکوردهای جدید برای میکوبیوتای ایران هستند. گونه *Cercospora iridis* که قبلا از ایران گزارش شده است، احتمالا متعلق به جنس *Passalora* است، اما برای نتیجه‌گیری نهایی می‌بایست نمونه‌های بیشتری بررسی شوند.

واژه های کلیدی: تاکسونومی، قارچ آنامورفیک، بیمارگر مولد لکه‌برگی، رکورد جدید

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