



***Camptomeris albiziae* on *Albizia lebbeck*: first record for North Western Himalayas and its distribution extension in India**

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Abstract

Camptomeris albiziae (Petch) E.W. Mason collected from leaves of *Albizia lebek* (Linn.) Willd., from Bilaspur, Himachal Pradesh, India, is described and illustrated. A literature survey revealed that this fungus has not been so far reported from North Western Himalaya and thus represents an extension of distribution of the fungus in India. Details on symptoms on host plant leaves, taxonomic descriptions and illustrations are provided here.

Key words – fungi – hyphomycetes – leaf spot – new record – taxonomy

Introduction

The genus *Camptomeris* Syd. was introduced with *C. callianrae* as the type species (Sydow 1927) from leaflets of *Calliandra similis* (family Mimosaceae). It is characterized by swollen stromal cells in sporodochium with simple, unbranched, macronematous conidiophores and simple obclavate to oblong, septate conidia.

During the exploration of foliicolous fungi, infected leaflets of *Albizia lebbeck* were observed and collected from Bilaspur district of Himachal Pradesh. Critical morphological examination of the disease spots revealed it to be a species of *Camptomeris*.

The host plant commonly known as Indian siris (silk plants) is a medicinal tree native to India, which is distributed throughout the country. This tree contains flavonoids, triterpenoids triterpenoid saponins; oleanolic acid, albigenic acid, albigenin and acacic acid which exhibit numerous medicinal properties (Khare 2007).

A detailed literature survey and comparative analyses (Mukerji and Juneja 1974, Bilgrami et al. 1991, Jamaluddin et al. 2004) revealed that this fungus is first time reported from North Western Himalayas. Therefore, a detailed taxonomic description of the species is provided.

Materials and methods

The infected leaflets of the *A. lebbeck* were collected during the course of a field survey in winter of 2015, dried between sheets of blotting paper and taken to laboratory for further analysis. Field notes were prepared regarding the disease symptoms, nature of colonies, nature of infection, locality and altitude, etc. The morphological examination of diseased spots was carried out with the help of hand lenses for colour and texture. Surface scrapings and sections were taken through infection spots

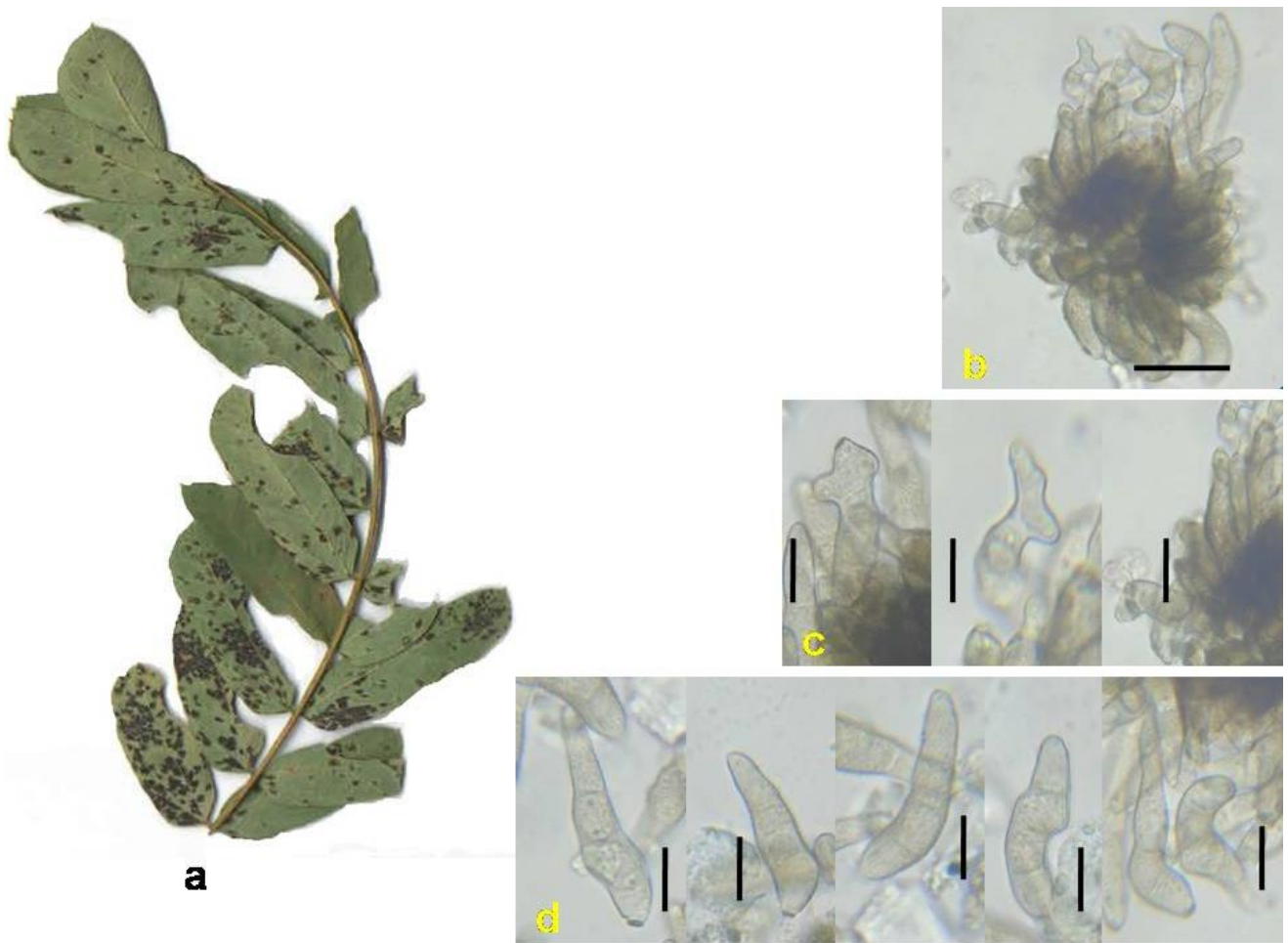


Fig 1 – *Camptomeris albiziae*. a. Infection spots. b. Sporodochia with conidiophores and conidia. c. Conidiophores. d. Conidia. Scale Bar: b=50µm; c=20 µm; d=10µm.

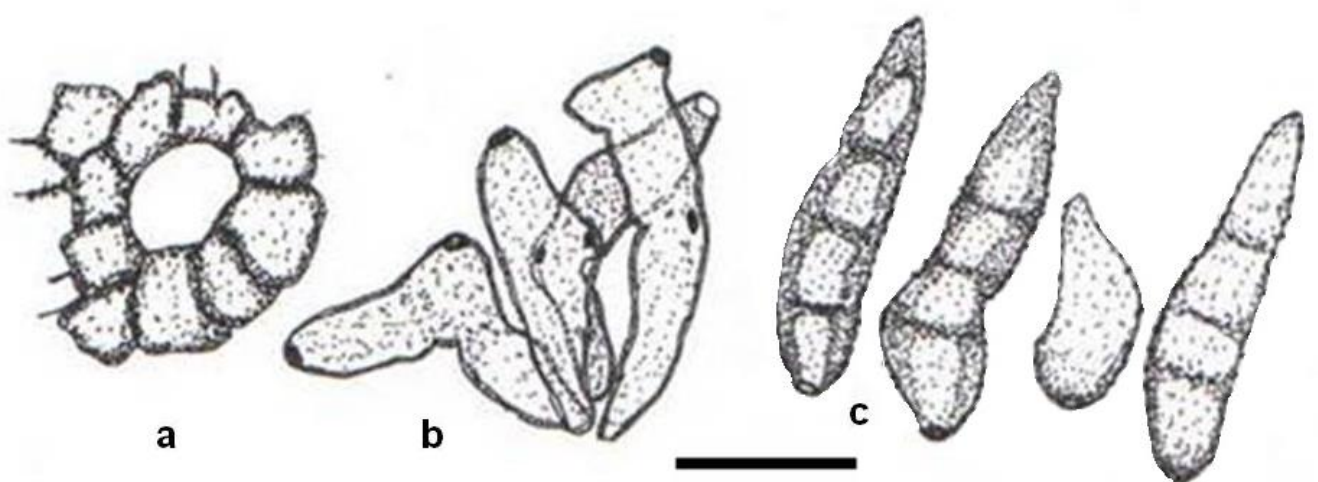


Fig. 2 – *Camptomeris albiziae*. a. Sporodochia with basal cells. b. Conidiophores. c. Conidia. (Scale Bar: a–c = 20µm)

and mounted in cotton-blue and lactophenol mount mixture for microscopic examinations. Morphotaxonomical details were observed and photomicrographs were taken. Drawings of conidiophores and conidia were made with the help of a camera-lucida under oil immersion and measurements were carried out with the help of micrometry at 1000× magnification. The specimen was deposited at Faculty of Agriculture, Abhilashi University Mandi, Himachal Pradesh, India for further reference.

Results

The symptoms produced by *C. albiziae* appeared as chlorotic patches 0.5–3 mm in diameter on upper surfaces of infected leaflets and crowded black pustules on lower surfaces. A profuse sporulation of fungus was observed on lower surfaces of disease leaflets. Patches often coalesced, causing chlorosis and abscission of leaflets. Detailed descriptions and illustrations of the fungi along with a discussion on its taxonomy are presented as here.

***Camptomeris albiziae* (Petch) E.W. Mason;** Hansford, Proc. Linn. Soc. London 155: 61 (1943) Fig. 1
= *Helminthosporium albiziae* Petch (1909)
= *Helminthosporium albiziae* (Petch) N. Naito (1940)

Infection spots (sporodochia) hypophyllous, dark plevaceous brown to black, circular, punctiform, scattered, rarely aggregated, 0.5-3.0 mm in diameter; sporodochia 40 – 155 × 38 – 105 μm (av. 83.6 × 76 μm) across, scattered, crowded, isolated or not united; conidiophores simple, semi erect, flattened, unbranched, non-geniculate, non-septate, brown, densely crowded in tufts, emerging through stomata, with a solitary prominent conidial scar at the tip, 23.1– 44 × 7 – 10 μm; Conidia borne singly at apex of conidiphore, obclavate, gradually tapering to a narrow, blunt apex, straight or curved, lighter fuliginous, 22 – 54 × 8 – 11 μm (av. 47 × 10 μm), 3 – 4 septate, usually not constricted at the septa, roughened with verrucosities about 1.5 μm.

Material examined – India, Himachal Pradesh, Bilaspur, 673m, on leaves of *Albizia lebbeck* (family Mimosaceae), collected by A.K. Gautam, 14 November 2013 (AUMH 1031).

Known distribution – India, Japan, Brazil, West Indies, America, China and South Africa.

Notes – *Camptomeris albiziae* has been transferred to *Helminthosporium albiziae*. Therefore, a comparison with *H. albiziae* was also carried out. The conidial scars are wider and the conidial bases are often flat and wide in *C. albiziae*. Here the conidial shape is obclavate while, elliptical in *Helminthosporium*. Conidia borne singly at apex of conidiophore in present fungus whereas, acrogenously or acropleurogenously in *Helminthosporium*. For these reasons, we have maintained the fungus name *C. albiziae* in present study instead of *H. albiziae*.

Discussion

Camptomeris is a widely distributed genus having a wide host range. Thirteen species of the genus have been reported worldwide, of which, six species viz. *C. acacia*, *C. albizziicola*, *C. crataeva*, *C. leucaenae*, *C. pulchra* and *C. albiziae* are reported from India (Bilgrami et al. 1991, Jamaluddin et al. 2004). A detailed comparison of conidia and conidiophores of *Camptomeris* spp. reported worldwide along with host range is provided in this study (Table 1 & 2). The names of some species have been changed. Currently accepted name according to the MycoBank (www.mycobank.org)/Species Fungorum (www.speciesfungorum.org) websites have also been provided along with previous names.

This species has already been reported from various localities in India i.e. from Assam (Agnihothurudu 1962, Mehrotra 1990), Tamil Nadu (Butler and Bisby 1931, Subramaniam 1952), Karnataka (Hiremath et al. 1991), Andhra Pradesh (Bessey 1953), Maharashtra (Patil and Thite 1977) and West Bengal (Banerjee et al. 1993).

Diverse climatic conditions prevailed in north western Himalayas including Himachal Pradesh favours the luxurious growth and development of foliicolous fungi (Gautam et al. 2011, Gautam et al. 2013). *Camptomeris albiziae* inhabits a wide array of hosts in India, no report is still available from any state of North Western Himalaya. Therefore, we present here not only a new record and new addition to mycoflora of North Western Himalayas but also its distribution extension in India.

Table 1 Diversity and host range of *Camptomeris* spp. reported on worldwide.

Species	Host	Country
<i>C. albiziicola</i> (Thirum. & Naras.) E.A. Bessey	<i>Albizia lebbbeck</i>	India
synonym <i>Helminthosporium albiziicola</i> Thirum. & Naras		
<i>C. albiziae</i> (Petch) E.W. Mason 1943	<i>Albizia lebbbeck</i>	India
synonym <i>Helminthosporium albiziae</i> Petch		
<i>C. crataeva</i> Subram. 1952	<i>Crataeva religiosa</i>	India
<i>C. leucaenae</i> (F. Stevens & Dalbey) Syd. 1930	<i>Leucaena leucocephala</i>	India
<i>C. astragali</i> E.A. Bessey 1955	<i>Astragalus sinicus</i>	Japan
<i>C. calliandrae</i> Syd. 1927	<i>Calliandrae similis</i>	
<i>C. cassiae</i> Bat., J.L. Bezerra & Poroca 1966	<i>Cassia</i> sp.	Brazil
<i>C. desmanthi</i> Cif. 1933;	<i>Desmanthi virgatus</i>	
<i>C. desmanthi</i> (Ellis & Kellerm.) Petr. 1934,	<i>Desmanthi brachylobus</i>	Kansas
synonym <i>Passalora desmanthi</i> (Ellis & Kellerm.) U. Braun		
<i>C. floridana</i> E.A. Bessey 1953	<i>Pithecellobium unguis- cati</i>	Florida
<i>C. martyinii</i> E.A. Bessey 1953	<i>Acacia villosa</i>	West Indies
<i>C. pulchra</i> (Syd.) U. Braun 1995	<i>Crataeva religiosa</i>	India
<i>C. sinensis</i> (Petr.) Petr. 1955	<i>Astragalus sinicus</i>	China
synonym <i>Epicoccum sinense</i> Petr.		
<i>C. verruculosa</i> (Syd. & P. Syd.) E.A. Bessey 1953	<i>Stigmia verruculosa</i>	South Africa

Table 2 Comparison of *Camptomeris* spp.

Species	Conidiophores		Conidia (in µm)
	Number	Size (in µm)	
<i>C. albiziae</i> (Petch) E.W. Mason	14–30 (av. 23)	23.1–44 (av. 32)	22 – 54 × 8 – 11 (av. 47 × 10)
<i>C. acaciae</i> (Syd.) Cif.	16–38 (av. 25)	25–38 (av. 32)	35–62 × 9–13 (av. 49 × 11.5)
<i>C. albiziicola</i> (Thirum. & Naras.) E.A. Bessey,	12–22 (av. 13)	12–25 (av. 32)	20–33.6 × 6.2–9.3 (av. 27.8 × 7.3)
<i>C. leucaenae</i> (F. Stevens & Dalbey) Syd.	--	29–43 (av. 32)	30–59 × 8.3–10.6 (av. 47 × 9.5)
<i>C. albiziae</i> (Petch) E.W. Mason	40–46 (av. 26)	26–51 (av. 39)	30–70 × 8–12 (av. 47 × 10)
<i>C. calliandrae</i> Syd.	6–19 (av. 11)	26–35 (av. 30)	25–53 × 8–16 (av. 41 × 12)
<i>C. desmanthi</i> Cif.	--	25–48 (av. 35)	30–52 × 8–13 (av. 40 × 10)
<i>C. desmanthi</i> (Ellis & Kellerm.) Petr.	--	24–30 (av. 33)	29–49 × 9–12 (av. 41.2 × 10)
<i>C. floridana</i> E.A. Bessey	16–105 (av. 41)	32–46 (av. 39)	34–48 × 7–11.5 (av. 42 × 10)
<i>C. martyinii</i> E.A. Bessey	16–38 (av. 25)	25–38 (av. 32)	35–62 × 9–13 (av. 49 × 11.5)
<i>C. pulchra</i> (Syd.) U. Braun	--	20–40 (av. 32)	30–65 × 5–8 (av. 49 × 11.5)
<i>C. verruculosa</i> (Syd. & P. Syd.) E.A. Bessey	16–82 (av. 60)	17–35 (av. 26)	26–47 × 7–11 (av. 37 × 9)

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