Cercospora habenariicola, a new record for India

Patil A, Patil MS and Dangat BT

Department of Botany, Rajaram College, 1Shivaji University, Kolhapur, (M.S), India
dhirajanj@gmail.com, 3schndangat@gmail.com


Cercospora habenariicola is recorded for the first time from India on seven species of Orchidaceae: Habenaria roxburghii, H. heyneana, H. longicorniculata, H. ovalifolia, Pecteilis gigantea, Peristylus densus, and P. goodyeroides.

Keywords – Cercospora – Habenaria – Pecteilis – Peristylus

Article Information
Received 2 May 2012
Accepted 6 August 2012
Published online 5 September 2012
*Corresponding author: Dangat BT – e-mail – schndangat@gmail.com

Introduction
To date about 5500 species of Cercospora are known (Crous & Braun, 2003). Nine species of Cercospora sensu lato have been recorded on hosts of family Orchidaceae, of which four species have been transferred to Pseudocercospora Speg. (Meeboon et al., 2007). Only one species of Cercospora has been reported on Orchidaceae from India, Cercospora eulophiae on Eulophia sp. (Patil, M.S., 1978).

The present paper records Cercospora habenariicola Meeboon, Hidayat & C. Nakash, for the first time from India. Meeboon et al. (2007) described C. habenariicola from Thailand on Habenaria susannae (L.) R.Br. It was found on seven species of Orchidaceae in India: Habenaria heyneana, H. longicorniculata, H. ovalifolia, H. roxburghii, Pecteilis gigantea, Peristylus densus and P. goodyeroides.

Materials and Methods
Healthy and infected specimens were collected from Kolhapur, Gaganbawada, Radhanagari and Panhala (Dist. Kolhapur, M.S.), Kas, Mahabaleshwar (Dist. Satara, M.S.), Sutakatti Ghat (Dist. Belgaum, K.S.) and Uttur (Dist. Ajara, M.S.) India in the period July-September 2010-11. Detailed observations of morphological characters were carried out under light microscope by preparing hand-cut sections, which were mounted in lactophenol cotton blue. Measurements were made of infection spots, stroma, conidiophores and conidia. Drawings were made with the help of a Camera Lucida at a magnification of 400 x (Fig. 1). Dried herbarium specimens have been deposited in National Fungal Culture Collection of India, Agahrkar Research Institute, Pune (NFCCI).

Results
Habitat – On living leaves and bracts of:
1. Habenaria heyneana Lindl., collected at Kolhapur, Radhanagari Gaganbawada, Panhala (Dist. Kolhapur, M.S.), Kas, Mahabaleshwar (Dist. Satara, M.S.), Sutakatti Ghat (Dist. Belgaum, K.S.)
2. Habenaria longicorniculata J. Graham, collected at Kolhapur, Radhanagari Gaganbawada, Panhala (Dist. Kolhapur, M.S.), Kas, Mahabaleshwar (Dist. Satara,
Figs 1–6  
1a,b Habit, on leaf of *H. longicorniculata* × natural size.  
2a-c Habit, on leaf of *H. heyneana* × natural size.  
3 Habit, on leaf of *H. roxburghii* × natural size.  
4 Habit, on leaf of *Pecteilis gigantea* × natural size.  
5a,b Stromata and conidiophores; a intra-epidermal, b sub-stomatal, 400 ×.  
6 Conidia 400 ×.
Table 1 Comparative characters of *Cercospora habenariicola* on different hosts

<table>
<thead>
<tr>
<th>Species</th>
<th>Host</th>
<th>Infection</th>
<th>Stroma</th>
<th>Conidiophores µm</th>
<th>Conidia µm</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Cercospora habenariicola</em></td>
<td><em>Habenaria susannae</em></td>
<td>amphigenous</td>
<td>Intra epidermal</td>
<td>Branched 7.3–7.5 x 50-285(-952)</td>
<td>4.9-5.0 x 75-110</td>
</tr>
<tr>
<td>Present collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Habenaria roxburghii</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 3.5 x 120-175</td>
<td>3.5-5 x 90-150</td>
</tr>
<tr>
<td>Present Collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>H. heynana</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 2.5-3 x 120-165</td>
<td>3 - 3.5 x 35-55</td>
</tr>
<tr>
<td>Present collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>H. longicorniculata</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 3.5 x 122-180</td>
<td>3.5-5 x 55-110</td>
</tr>
<tr>
<td>Present collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>H. ovalifolia</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 3-5 x 122-180</td>
<td>2 -2.5 x 65-125</td>
</tr>
<tr>
<td>Present collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Peristylus densus</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 3-5 x 50-62.5</td>
<td>2 -2.5 x 65-123.5</td>
</tr>
<tr>
<td>Present collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Peristylus goodyeroides</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 3-5 x 122-180</td>
<td>2 -2.5 x 65-125</td>
</tr>
<tr>
<td>Present collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pecteilis gigantea</em></td>
<td></td>
<td>hypophyllous</td>
<td>Intra epidermal / sub-stomatal</td>
<td>Branched 3-5 x 62.5-75</td>
<td>2 -2.5 x 160.5-187.5</td>
</tr>
</tbody>
</table>
M.S.), Uttur, (Ajara, Dist. Kolhapur, M.S.) NFCCI- AMH no. 9412.

All specimens were collected by Dr A.R. Patil and Mr B.T. Dangat in the months of August to September 2010-12.

All the specimens collected show similarities with *Cercospora habenariicola* (Table 1). The lesions in the present material are dark brown to black in colour, circular to irregular, up to 2 mm in diameter. Leaf spots are hypophyllous and not amphigenous as described for *C. habenariicola* (Meeboom et al. 2007). The stromata in the present materials are sub-stomatal and not intra-epidermal. The present collections show similarities to *Cercospora havenariicola* with regard to infection which is foliicolus, circular dark brown leaf spots, presence of stromata, conidiophores in spreading fascicles, collected on species of *Habenaria*. However, the present collections also differ in that the colonies are hypophyllous, the stromata are sub-stomatal, the conidiophores are simple, and the conidiophores and conidia are slightly smaller than reported for *C. havenariicola* (Meeboom et al. 2007). However, taking into consideration all characters, the present materials match well with *C. havenariicola*. The few variations may be due to ecological conditions. *C. havenariicola* is a new record to the fungi of India.

References


Meeboom J, Iman Hidayat, Chiharu Nakashima, Caiwat To-Anun. 2007 – *Cercospora havenariicola* sp. nov. and some new records of cercosporoid fungi from Thailand. Mycotaxon 99, 117–121