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## *Cercospora habenariicola*, a new record for India

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*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*

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### 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

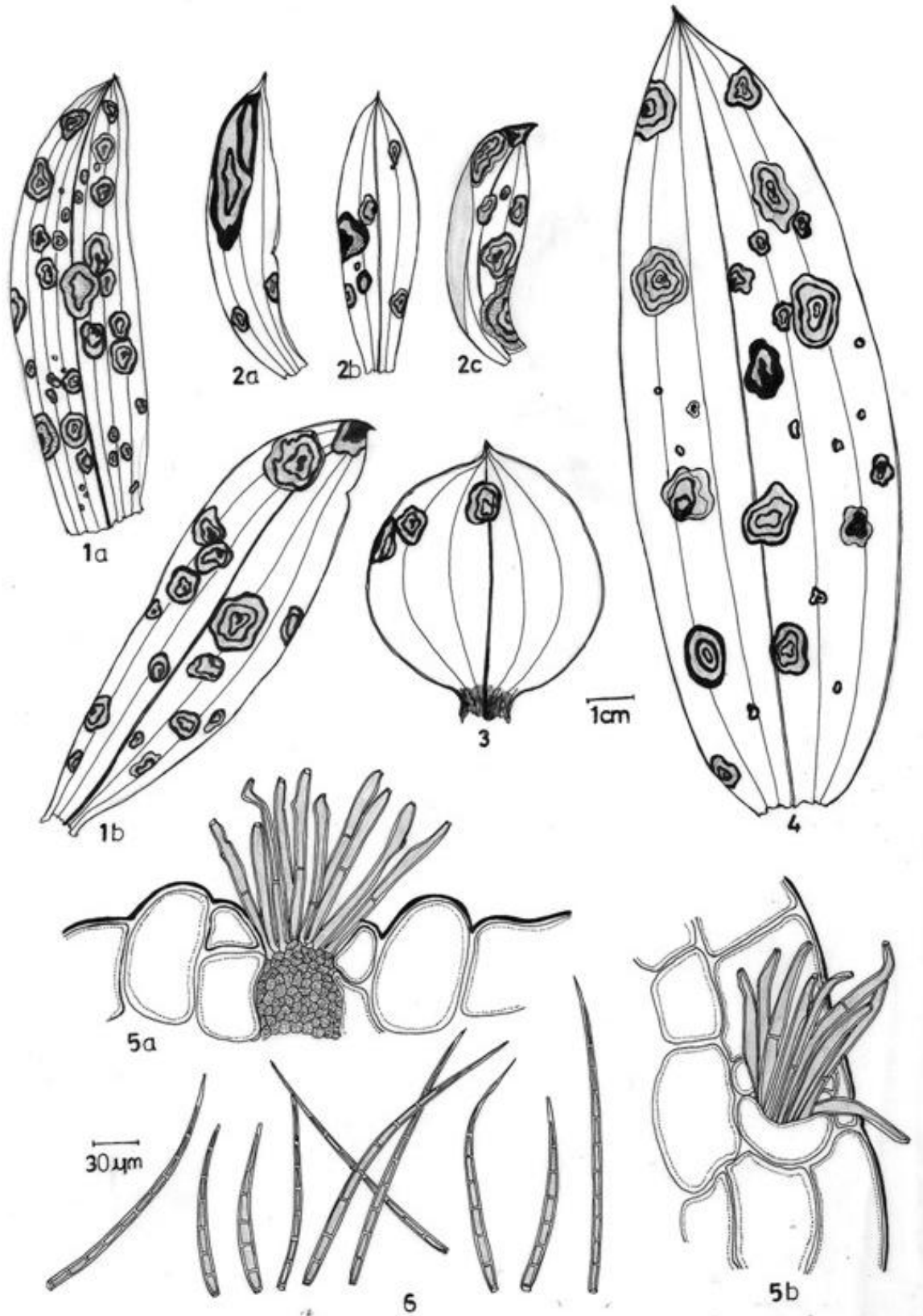
Healthy and infected specimens were collected from Kolhapur, Gaganbawda, Radhanagari and Panhala (Dist. Kolhapur, M.S.), Kas, Mahabaleshwar (Dist. Satara, M.S.), Sutakatti Ghat (Dist. Belgaum, K.S.)

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, stromata, 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, Agarkar 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.), Uttur, (Ajara, Dist. Kolhapur, M.S.), NFCCI-AMH no. 9411.
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

Species	Host	Infection	Stroma	Conidiophores µm	Conidia µm
<i>Cercospora habenariicola</i> (Meeboon et. al. 2007)	<i>Habenaria susanna</i>	amphigenous	Intra epidermal	Branched 7.3–7.5 x 50-285(-952)	4.9-5.0 x 75-110
Present collection	<i>Habenaria roxburghii</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 3-5 x 120-175	3.5-5 x 90-150
Present Collection	<i>H. heyneana</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 2.5-3 x 120-165	3 - 3.5 x 35-55
Present collection	<i>H.longicorniculata</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 3-5 x 122-180	3.5-5 x 55-110
Present collection	<i>H. ovalifolia</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 3-5 x 122-180	2 -2.5 x 65-125
Present collection	<i>Peristylus densus</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 3-5 x 50-62.5	2 -2.5 x 65-123.5
Present collection	<i>Peristylus goodyeroides</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 3-5 x 122-180	2 -2.5 x 65-125
Present collection	<i>Pecteilis gigantea</i>	hypophyllous	Intra epidermal / sub-stomatal	Branched 3-5 x 62.5-75	2 -2.5 x 160.5-187.5

- M.S.), Uttur, (Ajara, Dist. Kolhapur, M.S.) NFCCI- AMH no. 9412.
3. *Habenaria ovalifolia* Wight, collected at Gawse (Ajara, Dist. Kolhapur), Radhanagari and Patgaon (Dist. Kolhapur, M.S.) NFCCI- AMH no. 9440.
  4. *Habenaria roxburghii* Nicolson, collected at Kas, Mahabaleshwar and Sutakatti Ghat (Dist. Belgaum, K.S.) NFCCI- AMH no. 9410.
  5. *Pecteilis gigantea* Raf., collected at Radhanagari and Gaganbawda. NFCCI- AMH no. 9409.
  6. *Peristylus densus* (Lindl.) Santapau & Kapadia, collected at Radhanagari and Kas. NFCCI- AMH no. 9413.
  7. *Peristylus goodyeroides* Lindl., collected at Gawse (Ajara, Dist. Kolhapur), Radhanagari and Patgaon, (Dist. Kolhapur, M.S.) NFCCI- AMH no. 9439.

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* (Meeboon et al. 2007). The stromata in the present materials

are sub-stomatal and not intra-epidermal. The present collections show similarities to *Cercospora habenariicola* with regard to infection which is foliicolous, 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. habenariicola* (Meeboon et al. 2007). However, taking into consideration all characters, the present materials match well with *C. habenariicola*. The few variations may be due to ecological conditions. *C. habenariicola* is a new record to the fungi of India.

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