

Two new species of *Corynespora* from Uttar Pradesh, India

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This paper presents the descriptions and illustrations of two hitherto undescribed species of *Corynespora* Gussow viz., *Corynespora annonacea* sp. nov. and *Corynespora holopteleicola* sp. nov. collected on living leaves of *Annona squamosa* (*Annonaceae*) and *Holoptelea integrifolia* (*Ulmaceae*) respectively from Uttar Pradesh, India.

Key words – *Corynespora* – Foliicolous hyphomycete – Fungi – Morphotaxonomy – New species

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Introduction

The foliicolous hyphomycetous genus *Corynespora* was established by Gussow (1906). The genus is found predominately in tropics and subtropics including India, and is characterized by producing distoseptate conidia with or without distinct hila. The species of *Corynespora* range from saprotrophs to necrotrophs and to biotrophs. As parasites or biotrophs they assume great importance infecting different parts of the plant particularly living leaves. The area of leaf invaded by foliicolous hyphomycetes such as *Corynespora* usually become distinct due to the presence of fungus itself and the various local host responses ranging from discolouration to necrosis as the result. The leaf spots vary in colour, shape, size and other features of appearance depending upon the degree and type of host-parasite interaction and association.

Many novel species of *Corynespora* have been described from India (Meenu et al. 1997, 1998 Sarbhoy et al. 1996, Meenu &

Kamal 1998, Singh et al. 2000 a, b, 2007a, b, Sharma et al. 2002a, b, 2003, 2005, Jain et al. 2002, Dubey & Rai 2003, Jamaluddin et al. 2004, Kumar et al. 2007, 2008, 2012, Pal et al. 2007, Verma et al. 2008, Singh & Mall 2011, Singh & Kamal 2012). This paper is a continuation of the aforesaid contributions.

During our survey (2007–2009) of Uttar Pradesh, many collections showing foliar disease have been encountered, included amongst were two undescribed taxa of *Corynespora*. Descriptions and illustrations of these taxa are presented in the communication.

Methods

Surface scrapping and free hand cut sections were taken through infection spots and mounted in lactophenol cotton-blue mixture for microscopic examination, camera lucida drawing and micrometry. Type specimens have been deposited in HCIO, IARI, New Delhi and their isotopes have been retained in the departmental herbarium.

Results

Taxonomy

Corynespora annonacea Sham. Kumar, R. Singh, Gond & Saini **sp. nov.** Fig. 1
MycoBank MB 800578

Infection spots amphigenous, circular to irregular, brown on upper surface with dark brown margin, light brown on lower surface, later becoming necrotic, 2–20 mm in diam. Colonies amphiphylous, effuse, dark grey. Mycelium internal, septate, smooth, thin-walled, branched, subhyaline to pale brown. Stromata absent. Conidiophores macronematous, mononematous, arising singly, straight to curved, erect to procumbent, simple to branched, cylindrical, thick-walled, 2–4 euseptate with 0–3 successive cylindrical proliferations, basal cell swollen, light to dark olivaceous brown, 195–260 μm long and 5–9 μm wide. Conidiogenous cells integrated, terminal, monotretic, scars thickened to unthickened. Conidia solitary to catenate, dry, acrogenous, simple, smooth, thin-walled, straight to curved, obclavate to obclavate-cylindrical, apex obtuse to rounded, base truncate, 1–10 distoseptate with 0–1 distinct constriction, hilum unthickened, subhyaline to olivaceous brown, 25–135 \times 10–18 μm in diam, germinating conidia present.

Type – On living leaves of *Annona squamosa* L. (*Annonaceae*), University Campus, Gorakhpur (U.P.), India, February, 2008, coll. Shambhu Kumar, GPU–KSR 111 (**isotype**), HClO 48273 (**holotype**).

Etymology – *annonacea* in reference to the host genus.

A literature survey indicated that no species of *Corynespora* have been described on this host and host family. Therefore, the morphotaxonomic comparison is done with type species *C. cassicola* (Berk. & Curt.) Wei (1950).

The conidiophores of present collection are much shorter, fewer septate and fewer proliferations in comparison to the type species *C. cassicola*, in which conidiophores are longer (110–850 \times 4–11 μm), multiseptate with 9 successive proliferations. The conidiophores are branched in *C. annonacea* while they are

unbranched in *C. cassicola*. The conidia of the new species are shorter than those of *C. cassicola* (40–220 \times 9–11 μm). Therefore, proposal of *C. annonacea* as a new taxon of species rank is found to be justified.

Corynespora holopteleicola Sham. Kumar, R. Singh, Gond & Saini **sp. nov.** Fig. 2
MycoBank MB 800579

Infection spots amphigenous, subcircular to irregular, brown to dark brown, 2–18 mm in diam. Colonies amphiphylous, effuse, greyish. Mycelium internal to external, branched, septate, subhyaline to brown. Stromata absent. Conidiophores macronematous, mononematous, arising singly, erect to procumbent, straight to flexuous, simple to branched, smooth, thick-walled, 2–4 euseptate with 0–4 successive cylindrical proliferations, base swollen olivaceous brown, hilum unthickened 120–255 μm long and 5–20 μm wide. Conidiogenous cells integrated, terminal, scar thickened. Conidia monoblastic, acrogenous, dry, simple, solitary, smooth, thin-walled, straight to curved, obclavate to obclavate-cylindrical, apex obtuse to rounded, base rounded, 0–11 distoseptate with 0–2 distinct septate, olivaceous brown, hilum unthickened, 33–148 \times 5–20 μm .

Type – On living leaves of *Holoptelea integrifolia* Roxb. (*Ulmaceae*), University Campus, Gorakhpur (U.P.) India, January 2008, coll. Shambhu Kumar, GPU–KSR112 (**isotype**), HClO 48274 (**holotype**)

Etymology – *holopteleicola* in reference to the host genus.

Another species *Corynespora holopetae* has been described on the same host. (Jain et al. 2002).

However, the conidiophores are shorter in *C. holopteleicola* than those in *C. holopetae* (49–314 \times 5–9 μm). The conidia of *C. holopteleicola* are also shorter (33–148 \times 5–20 μm) than those of *C. holopetae* (23–234 \times 3.5–20 μm). There are fewer distosepta in conidia of *C. holopteleicola* than in *C. holopetae* (up to 17). The conidial scar is unthickened in *C. holopteleicola* while it is thickened in *C. holopetae*. Therefore, it merits recognition as a new taxon at species rank.

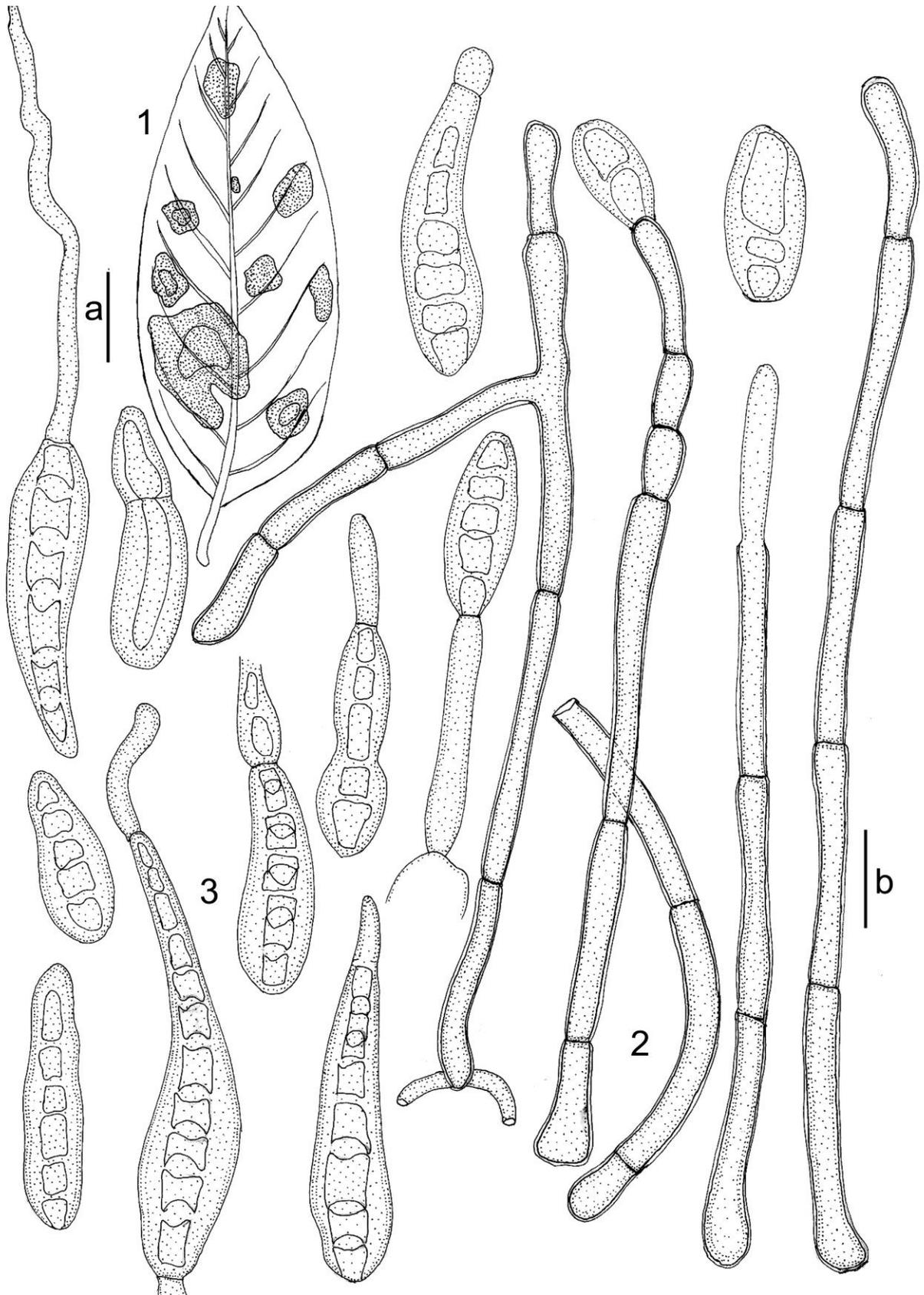


Fig. 1 – *Corynespora annonacea*. **1** Infection spots. **2** Conidiophores. **3** Conidia. Bars a = 20 mm, b = 20 μ m.

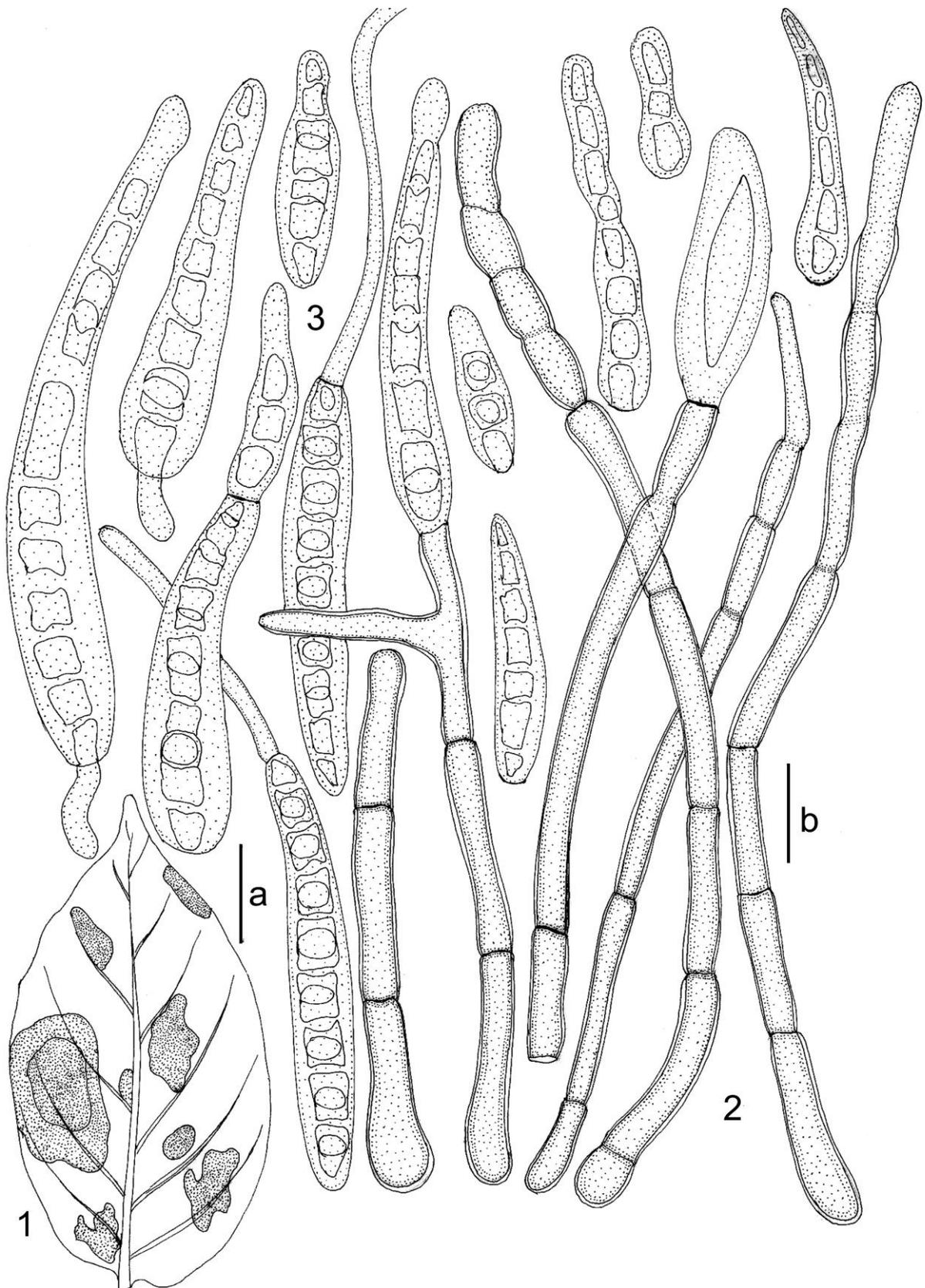


Fig. 2 – *Corynespora holopteleicola*. **1** Infection spots. **2** Conidiophores. **3** Conidia. Bars a = 20 mm, b = 20 μ m.

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