HARKNESSIA SPECIES OCCURRING IN SOUTH AFRICA

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ABSTRACT

Three new species of Harknessia are described from leaves of woody hosts in South Africa. Harknessia eucalyptorum and its teleomorph, Wuestenia eucalyptorum, are described from Eucalyptus leaves. In this case, the teleomorph anamorph connection was proven in culture. Harknessia fusiformis is described from Eucalyptus leaf litter, while H. syzygii is described from Syzygium cordatum. Additional collections of H. uromyoides and H. hawaiienensis are also discussed, and a microconidial state described for the latter species.

Key Words: Eucalyptus, foliicolous fungi, Harknessia, systematics, Syzygium cordatum, Wuestenia

Three comprehensive reviews on this genus have been published (Sutton, 1971, 1980; Nag Raj and Di Cosmo, 1981) since Harknessia Cooke was first described (Cooke and Harkness, 1881). Recent studies (Galán et al., 1986; Sutton and Pascoe, 1989) have led to the description of three additional species, including the Cryptosporella Saccardo teleomorph of Harknessia karvariae Sutton & Pascoe. In a recent study of the genus Cryptosporella, Reid and Booth (1989) concluded that Wuestenia Auerswald is the correct name for fungi previously assigned to Cryptosporella.

Several Harknessia spp. are known to produce microconidial states. The first record of a microconidial state for Harknessia is that described by Sutton (1971) for H. antarctica Spegazzini. Subsequently, Nag Raj and Di Cosmo (1981) described microconidial states for seven species, and Sutton and Pascoe (1989) described an additional two.

Harknessia uromyoides (Speg.) Speg. was the first species of the genus reported to occur on Eucalyptus leaves in South Africa (Doidge, 1950). In this paper we describe Wuestenia eucalyptorum and its Harknessia anamorph from Eucalyptus leaves, H. syzygii from Syzygium cordatum Hochst. and H. fusiformis from Eucalyptus leaf litter. Additional collections of H. uromyoides and H. hawaiienensis Stevens & Young are also discussed. A microconidial state is described for the latter species.

MATERIALS AND METHODS

Symptomatic leaves and leaf litter were collected at regular intervals since 1987 at a Eucalyptus provenance trial planted on Stellenbosch Mountain in the Western Cape, as well as at different locations in Transvaal, Natal and Orange Free State Provinces. In addition to Eucalyptus leaves, leaf litter of S. cordatum was collected in Natal and Transvaal Provinces.

Leaves were incubated in moist chambers at 25 °C under near-ultraviolet light for 3 days, after which time furfuraceous margins and exuding black spore masses indicated the presence of Harknessia conidiomata. To detect the presence of a teleomorph, leaves were incubated in the dark at 4–7 °C for 3 days before incubating as explained above. Material was mounted in water, lactophenol cotton blue, erythrosin, 3% KOH as well as Melzer’s reagent. Wherever possible, 50 examples of each structure were measured and averages given.

Single conidial and ascospore isolates were obtained using the dilution plating technique on malt extract.
agar (15 g Difco agar, 20 g Oxoid malt extract, 1 L water) (MEA). To induce sporulation, cultures were placed on MEA, carnation-leaf agar (CLA) (Fisher et al., 1982; Crous et al., 1992) or Eucalyptus leaf agar (leaf-discs sterilized using 1.2-propylene oxide), and subsequently incubated at 20 and 25°C under near-ultraviolet/white light.

The optimum growth temperature was determined for each of the fungi on MEA. One single-conidial isolate was taken as representative of each species, and used in the growth studies. Optimum growth temperature (expressed as colony diameter) was determined after isolates were incubated for 3 days in the dark at eight temperature settings ranging from 5-40°C at 5°C intervals. Each treatment had three replications and the experiment was repeated.

RESULTS AND DISCUSSION

During a study of fungi occurring on Eucalyptus leaves in 1988, a Harknessia sp. was found on leaves of *E. globulus* Labill., *E. nitens* (Deane & Maid.), Maid. and *E. maidenii* F. Muell. at Stellenbosch in the Western Cape Province. Examination of the conidiomata showed conidia to be 16-22 × 8-14 μm (μ = 19 × 12 μm), broadly ventricose with apiculate to obtuse apices. The appendages were 2-18 (μ = 8.5 μm), suggesting that this fungus was *Harknessia eucalypti* Cooke *apud* Cooke & Harkn. (Crous et al., 1989). Since these initial collections, additional material has been obtained from the same area on leaves of *E. andrewsii* Maid., *E. grandis* Hill: Maid., *E. tereticornis* Sm. and *E. viminalis* Labill. An examination of these collections together with cultural studies has shown that the South African material differs morphologically from *H. eucalypti*. Conidia were found to vary in shape from ventricose to broadly ventricose with apiculate or rounded apices. Conidia were 16-29 × 9-15 μm (μ = 22 × 12 μm) in size, thus similar to those of *H. eucalypti* (Fig. 1), 19-28 × 11-15 μm, and *H. podocarpi* Lindquist & Sutton *apud* Sutton, 17.5-26 × 11-15 μm (Nag Raj and Di Cosmo, 1981).

The conidia from these new collections from South Africa could be distinguished from those of *H. eucalypti* by their more obtuse conidial apices and longer appendages. Although conidial dimensions of these collections fit those of *H. podocarpi*, the conidia differ from this species by not being striate and not having persistent mucous sheaths. The fungus previously recorded as *H. eucalypti* in South Africa (Crous et al., 1989) and that noted in the more recent collections are therefore described below as a new species of *Harknessia*.  

![Fig. 1. Conidia of Harknessia eucalypti (IMI 146779). Bar = 10 μm.](image-url)

**Harknessia eucalyptorum** Crous, Wingfield et Nag Raj, *sp. nov.*

Conidiomata separata, immersa, globosa ad subglobosa, unilocularia, erumpentia et punctiformia, usque ad 350 μm diam, ostiolum margin: furfuraceo, pallide brunneo; parietes basales et laterales, 5-7 cellulis crus:es, ex textura angulari compositi. Conidiophora ad cellulas conidiogenas deminuta. Cellulae macroconidigenae discreteae, hyalinae, laevas, lageniformes, doliformes ad cylindricae, 6-20 × 3.5-6.2 μm basi, ex cellulis interioribus parietis conidiomati orientae. Conidiomum unum efferentes vel proliferatio una enteroblastica. Macroconidia holoblastica, late ventricosa, cum guttula centrali, aseptata, atrobrunnea, apice obtusa, subtus ad apiculatum, basi truncatum, 16-29 × 9-24 μm (μ = 22 × 11 μm) in foliis, 14.5-24 × 10.5-14 μm (μ = 19.5 × 12.5 μm) in cultura; appendix hyalina, non ramosa, basalis, 3-16 μm (μ = 10.5 μm) longa in foliis, usque ad 12 μm longa in cultura. Cellulae microconidigenae subcilindricae ad lageniformes, hyalinae, laeves, usque ad 15 μm longae, 2.5-4 μm crassa, basi. Microconidia holoblastica, apicalia vel lateralia, hyalina, aseptata, laeves, ellipsoidea ad fusiformia, 4.5-9 × 2-3.5 μm.


Folicolous and caulicolous. Conidiomata separate, immersed, globose to subglobose, unilocular, erumpent and punctiform, up to 350 μm diam, ostiosome with a light brown furfuraceous margin; basal and lateral walls five to seven cells thick, composed of textura angularis. Conidiphores reduced to conidiogenous cells. Macroconidigenous cells discrete, hyaline, smooth, lageniform, doliform to cylindrical, 6-20 μm long, 3.5-6.2 μm wide at the base, formed from inner cells of conidiomatal wall, producing a single conidium or proliferating enteroblastically once, periclinally thickening minute, collarette absent. Macroconidia holoblastic, broadly ventricose with central guttule, aseptate, dark brown, astrate, apex obtuse to bluntly apiculate, base truncate, 16-29 × 9-24 μm (μ = 22 × 11 μm) on
leaves, 14.5-24 × 10.5-14 μm (x = 19.5 × 12.5 μm) in culture; basal appendage hyaline, unbranched, 3-16 μm (x = 10.5 μm) on leaves, up to 12 μm in culture. Conidiogenous cells and appendages sometimes enclosed in a nonpersistent mucilaginous sheath. Microconidiogenous cells in the same or in separate conidiomata, subcylindrical to lageniform, hyaline, smooth walled, with cytoplasmic channel and periclinal thickening but no collarette, up to 15 μm long, and 2.5-4 μm wide at base. Microconidia holoblastic, 2.5-4 μm.

In culture: basal appendage hyaline, unbranched, 3-16 μm (x = 10.5 μm) on leaves, up to 12 μm in culture. Conidiogenous cells and appendages sometimes enclosed in a nonpersistent mucilaginous sheath. Microconidiogenous cells in the same or in separate conidiomata, subcylindrical to lageniform, hyaline, smooth walled, with cytoplasmic channel and periclinal thickening but no collarette, up to 15 μm long, and 2.5-4 μm wide at base. Microconidia holoblastic, 2.5-4 μm.


** Eastern Transvaal: Jessievale, E. nitens, 24 Nov. 1988, P. W. Crous (PREM 50820).**

In this study we observed variation in the symptoms associated with *H. eucalyptorum*. It was usually found associated with a leaf and peduncle necrosis of various Eucalyptus spp., and although lesions were always distinct and light brown in color, they were surrounded by a large chlorotic band on *E. tereticornis* but not on other host species. On *E. viminalis*, however, lesions occurred mainly along the leaf margins.

Isolates of *H. eucalyptorum* grew optimally on MEA at 25 C, and sporulated after 2 wk. Colonies were white to pale yellow colored, eventually turning olivaceous green at the center when sporulating. Conidia from cultures derived from different host species were similar in size and appendage length to those occurring on leaves (Table I). Conidia from cultures were generally broadly ventricose with obtuse apices, and a central, globose guttule. Although a microconidial state was present on collections made from *E. nitens* and *E. maidenii* leaves, no microconidia were formed in culture.

In recent collections of *H. eucalyptorum* (colonia 18-29 × 9-14 μm (x = 22 × 11 μm), appendages 3-16 μm (x = 10.5 μm)] from leaves of *E. andrewsii* and *E. maidenii*, the conidiomata were associated with the ascosporae of another fungus, and hyphal connections were also observed between the two fructification types. Colonies obtained from single ascospores on MEA were white, flocculent, turning the medium carmel brown in color. Conidiomata with conidia of *H. eucalyptorum* were observed after 3 months on MEA to which sterilized pieces of Eucalyptus leaf had been added. We therefore believe that the fungus producing ascomata found on *Eucalyptus* leaves is the teleomorph of *H. eucalypt-
<table>
<thead>
<tr>
<th>Conidial length x width (µm)</th>
<th>Appendage length (µm)</th>
<th>Host</th>
<th>Conidium (length/width ratio)</th>
<th>Specimen</th>
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<tr>
<td>16-22 x 8-14 (19 x 12)</td>
<td>2-18 (8.5)</td>
<td>E. maidenii</td>
<td>1.6/1</td>
<td>PREM 49105</td>
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<td>20-32 x 9-15.5 (27 x 13)</td>
<td>2-18 (10)</td>
<td>E. maidenii</td>
<td>2.0/1</td>
<td>PREM 50815</td>
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<td>20-27.5 x 11-14.5 (22.5 x 12)</td>
<td>7-20 (14)</td>
<td>E. nitens</td>
<td>1.9/1</td>
<td>PREM 50820</td>
</tr>
<tr>
<td>21-29 x 11-15.5 (26.5 x 13.5)</td>
<td>5.5-21 (13.5)</td>
<td>E. tereticornis</td>
<td>2.0/1</td>
<td>PREM 50821</td>
</tr>
<tr>
<td>20-28 x 10-13 (25 x 11)</td>
<td>5-18 (12)</td>
<td>E. tereticornis</td>
<td>2.3/1</td>
<td>in vitro</td>
</tr>
<tr>
<td>18-22 x 9-12.5 (19.5 x 12)</td>
<td>2-18.5 (10.5)</td>
<td>E. viminalis</td>
<td>1.6/1</td>
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<td>20-27.5 x 10-16.5 (24 x 13)</td>
<td>4-23 (13.5)</td>
<td>Eucalyptus sp.</td>
<td>1.8/1</td>
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<tr>
<td>17.5-20 x 9-13.5 (19.5 x 12)</td>
<td>5-14.5 (9)</td>
<td>Eucalyptus sp.</td>
<td>1.6/1</td>
<td>PREM 50827</td>
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<td>16.5-23 x 11-14 (20 x 12)</td>
<td>7-14 (10)</td>
<td>Eucalyptus sp.</td>
<td>1.7/1</td>
<td>PREM 50828</td>
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<td>18-29 x 9-14 (22 x 11)</td>
<td>3-16 (10.5)</td>
<td>E. andrewsii</td>
<td>2.0/1</td>
<td>PREM 50813</td>
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<tr>
<td>14.5-24 x 10.5-14 (19.5 x 12.5)</td>
<td>3-12 (10)</td>
<td>in vitro</td>
<td></td>
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</tbody>
</table>

* Averages in brackets are representative of 50 measurements.

Moreover, the structure of the perithecia and morphology of the asci and ascospores are consistent with those of Wuestenia, which are known to have teleomorphs of Harknessia. The yellow brown ectostromata that did not produce a purple reaction in KOH, as well as the brown conidia, place this fungus in the section Sordida Reid & Booth (Reid and Booth 1989). We describe the teleomorph state of *H. eucalyptorum* as follows:

**Wuestenia eucalyptorum** Crous, Wingfield et Nag Raj, sp. nov.  
(Figs. 2, 12, 13)

Ascomata perithecialia, singula vel usque ad 5 aggregata, immersa, disco furfuraceo brunneo, collo peritheciali erumpenti ad depresso, perithecia usque ad 250 μm diam, pari etibus 7-15 μm crassis, quinque cellulis crassis, ex textura anguste atrobrunnea compositis, versus centrum pallidorum. Asci unitunicati, cylindrici ad clavati, hyalinae, laevae, octospori, 70-110 × 13-20 μm, poro iodo tinto haudd caerulecente. Ascoporeae septatae, univ- vel biseriate, ellipsoidae, ad apicem at basam obusae, hyalinae, pari etibus crassis, guttulatae, laevae, 13-28 × 8-13 μm.


Although asci and ascospores of the teleomorph Cryptospora karvarrae Sutton & Pascoe were similar in size to those of W. eucalyptorum, *H. karvarrae* Sutton & Pascoe had smaller conidia with shorter appendages (Sutton and Pascoe, 1989). No other *Wuestenia* sp. with a *Harknessia* anamorph (Nag Raj and Di Cosmo, 1981; Reid and Booth, 1989) is similar to W. eucalyptorum.

**Anamorph:** *Harknessia eucalyptorum* Crous, Wingfield et Nag Raj, sp. nov.


This species occurs not only on leaves but also on twigs, petioles and seed capsules of *Eucalyptus.*
It has been reported from Argentina, Australia, California, U.S.A. and Portugal (Sutton, 1971, 1980). *H. uromycoides* is not host specific, and hosts include members of the Leguminosae (Swart, 1972) and Proteaceae (Sutton and Pascoe, 1989). Doidge (1950) referred to a record of *H. uromycoides* (PREM 2261) on *E. amygdalina* Labill. from a nursery in the Transvaal Province of South Africa, but this collection lacks any fungal material (Crous et al. 1989).

New collections of *H. uromycoides* have recently been made from necrotic leaf tips and leaf litter of *Eucalyptus* spp. in the Western Cape and Transvaal, where it probably exists as a saprophyte.

Conidiomata of *H. uromycoides* were found on peduncles and laminae of leaves. They were globose to subglobose, initially subepidermal, protruding with age and exuding black conidial masses. Conidiogenous cells were almost always restricted to the basal wall, and were long lageniform to cylindrical, hyaline and unbranched. Appendages attached to conidiogenous cells were up to 110 μm in length. Conidia were oblong-ellipsoidal with apiculate apices and large globose to irregular guttules. Conidia were 15–29.5 × 9.2–13.8 μm (x = 22 × 12.5 μm) with hyaline persistent appendages 30–100 μm (x = 56 μm). Some conidia had a longitudinal band of paler pigment, characteristic of this species (Sutton, 1971).

Cultures grew slower and sporulated less than any other *Harknessia* sp. tested in this study. Adequate sporulation was obtained for all isolates after 2–3 wk on CLA. Cultures had a dense white to pale yellow mycelium on MEA with denser flocculent borders forming a ridge around the colonies. After 5 wk, colonies became olivaceous green and sparse sporulation was observed on MEA. Optimal growth occurred at 20 C (Fig. 3). Conidia of *H. uromycoides* from cultures were slightly smaller than those observed in vivo but were still oblong-ellipsoidal and apiculate with characteristic longitudinal bands of paler pigment, and had long appendages attached.

**HOSTS:** *E. globulus*, *E. amygdalina*, *Eucalyptus* spp.


During Feb. 1990, *Eucalyptus* leaf litter was collected under trees growing at Bloemfontein in the Orange Free State. An examination of these leaves revealed a *Harknessia* sp., chiefly characterized by very long, ventricose conidia and long appendages. The only other species with which it could be confused is *H. spermatoidea* Galán, Moreno & Sutton (Fig. 5). However, an examination of the type collection of the latter species (IMI 295508) showed that it had shorter...
appendages and smaller conidia. Another important difference between these two fungi was the shape of immature conidia, being spermatoid in *H. spermatoides* and more fusiform in the South African collection. The collection from *Eucalyptus* leaves at Bloemfontein is described as follows:

**Harknessia fusiformis** Crous, Wingfield et Nag Raj. *sp. nov.*

Follicola. Conidiomata immersed, erumpentia, unilocularia, globosa, usque ad 400 μm diam. ostiolo centrali furfuraceo; partites basales et laterales conidiomatarum 3–6 cellulis crasses, ex textura angulari hyalina ad pallide brunnea compositi. Conidiophora ad cellulas conidiogenas deminita. Cellulae conidiogenae discreteae, hyalinae. laeves; lageniformes ad doliiformes, 7–12 μm longae. 5–7 μm latae basi, usque ad bis proliferatione enteroblastica. Conidia holoblastica, ventricosa vel fusiformi-ellipsoidalia cum guttula centrali vel multitubulata, atrobrunnea. laevia. non striata, saepè longitudinali sectione clariori colore, apices apiculati vel obtusi, 22–45 × 8–12 μm (x = 31 × 9 μm), appendix basalis hyalina, non ramosa 45–150 × 2–4 μm (x = 80 × 2 μm).


Follicolus. Conidiomata immersed, becoming erumpent, unilocular, globose, pycnidioid, up to 400 μm in diam. with furfuraceous central ostiole: basal and lateral walls 3–6 cells thick, composed of hyaline to pale brown *textura angularis*. Conidiophores reduced to conidiogenous cells. Conidiogenous cells discrete, hyaline, smooth-walled, lageniform to doliiform, 7–12 μm long and 5–7 μm wide at base, producing a single conidium or proliferating enteroblastically up to two times, periclinal thickening minute, collar-like present. Conidia holoblastic, ventricose to fusiform-ellipsoidal, single central guttule, or multiguttulate, dark brown, smooth, nonstriate, frequently with longitudinal band of paler pigment, apices apiculate to obtuse. 22–45 × 8–12 μm (x = 31 × 9 μm), basal appendage hyaline, unbranched, 45–150 × 2–4 μm (x = 80 × 2 μm). Mean conidial body length:width ratio 3.4:1; microconidia and teleomorph not known.

**HOST:** *Eucalyptus* sp.


Cultures of this species sporulated abundantly and grew more rapidly than did those of all the other species tested except for those of *H. hawaiensis*. Colonies had a dense white mycelium on MEA with denser fluffy borders forming a ridge. Optimum growth occurred at 25 C (FIG. 3). When conidia germinate or field material is incubated in moist chambers for more than 4 wk, conidia tend to become more fusiform and elongated in shape and up to 70 μm in length. Germinating conidia can also develop up to three septa. Under moist conditions, conidiospores of this species were also found in mixed infections with a globose-sporing species. The latter has larger conidia and longer appendages than does *H. globosa* Sutton (FIG. 7), and it also possesses a persistent conidial mucous sheath and a deeply striate conidial wall (FIG. 8) (PREM 50844). This suggests that there is an...
FIG. 7. Conidia and conidiogenous cells of Harknessia globosa (IMI 21815). Bar = 10 μm.

other, as yet undescribed species with globose conidia present in South Africa. More collections are required to describe this taxon adequately.

Cultures of H. hawaiensis grew vigorously on MEA, and optimal growth was attained at 25 C (Fig. 3). Colonies remained white and were less flocculent than those of H. eucalyptorum, H. fusiformis and H. uromyoides. This species sporulated more readily in culture than any other Harknessia sp. tested with abundant, distinct conidiomata forming after 1 wk of incubation. The average size of the conidia and conidiophores produced in culture varied little from those formed in vivo.

Examination of the type collection of H. hawaiensis (IMI 148757b) showed its conidia having short appendages (1.2–5 μm) and smooth nonstriate walls. As noted by Sutton (1971), the immature conidia lack a mucous sheath. However, examination of fresh South African collections showed this species is more variable than originally believed. For example, striations and a nonpersistent mucous sheath can be present. Furthermore, collections made from E. nitens (PREM 50839) and a Eucalyptus sp. (K?) contained conidiomata with macro- and microconidia. Sporulation of single-macrospore cultures on CLA induced both conidial types, but only macroconidia were obtained from cultures on MEA. This is the first report of a microconidial stage for H. hawaiensis.

Harknessia globosa and H. hawaiensis are the only two Harknessia spp. on Eucalyptus spp. described as having globose conidia which apparently lack striations (Sutton, 1971, 1980). In this study we found that conidia of both of these species can be finely striate as noted by Nag Raj and Di Cosmo (1981), and that nonpersistent mucous sheaths can also be present. The presence of striations and mucous sheaths seem to be highly variable characters that should be recorded with great care. Although the widths of the conidiogenous cells and appendages are described as being different for H. hawaiensis and H. globosa (Sutton, 1971), we found there was considerable overlap when measurements were taken from cultures of H. hawaiensis. We found the two species to have similar appendage sizes.
but could distinguish them by the fact that conidia were larger in *H. globosa* [12.5-17 × 11-13.7 μm (X = 14.6 × 12.7 μm)] (IMI 218115) (Fig. 7), and smaller in *H. hawaiiensis* [9-13.5 × 8-11 μm (X = 11 × 9 μm)]. Furthermore, the conidiogenous cells of *H. hawaiiensis* were up to 20 μm in length, whereas those of *H. globosa* were up to 31 μm long. On the basis of the collections examined in this study, we provide the following amended description of *H. hawaiiensis*.

Conidiomata sparse, amphigenous on leaves, small, separate to aggregated, globose, almost superficial to subepidermal and protruding, up to 400 μm in diameter in vivo, up to 350 μm in vitro, with black conidial masses exuding from ostioles with furfuraceous margins. Conidiphores reduced to conidiogenous cells. Macroconidiogenous cells, phialides, long lageniform, with the base 2.5-7 μm wide, often becoming septate approximately 4-7 μm from the base, 1.5-3 μm wide towards the apex, hyaline, smooth walled, unbranched, with one to two enteroblastic proliferations, enclosed in a nonpersistent mucilaginous sheath. 7-20 μm in length. Macroconidia holoblastic, aseptate, globose to subglobose, smooth walled, often finely striated in localized areas, with more or less central globose to irregular guttules, 9-13.5 × 8-11 μm, initially enclosed in mucilaginous sheaths, with a persisting hyaline basal appendage, devoid of cytoplasm, 1-8 μm (X = 5 μm) long. Microconidiogenous cells formed in the same conidiomata, 2-9 μm long, ampulliform, lageniform or cylindrical, hyaline, smooth, proliferating enteroblastic, with distinct cytoplasmic channels and periclinal thickening without collarettes. Microconidia holoblastic, hyaline, aseptate, smooth, ellipsoidal to fusiform, sometimes with minute marginal frills, 2.5-8.8 × 1.5-3 μm.

**HOSTS:** *E. robusta* Sm., *E. grandis*, *E. nitens*, *E. maiteni*, *E. punctata* DC., *Eucalyptus* spp.


In an examination of leaf litter collected from *Syzygium cordatum* in the Eastern and Northern Transvaal, another *Harknessia* sp. was found. This species resembled several other species in having ventricose conidia. However, conidia from these leaves were narrower and more ventricose than those of *H. arctostaphyli* Cooke & Harkn., *H. eucrypta* (Cooke & Mass.) Nag Raj & Di Cosmo, *H. fuegiana* Speg., *H. rhinoa* Ellis & Everh., *H. ventricosa* Sutton & Hodges and *H. spermatioideae*. Although there are several species with similar appendage lengths, none has the same conidial dimensions. This collection is, therefore, described as a new species of *Harknessia* as follows:

**Harknessia syzygii** Crous, Wingfield et Nag Raj, sp. nov.

**Figs. 3, 10, 17.**

**Follicola.** Conidiomata stromatic, abundantia, amphygina, subepidermalia, immersa, erumpentia et punctata, globo ad subglobo, usque ad 250 μm diam, unilocularia, area dehiscentiae spuria ostiolata, ostioli marginibus furfuraciis; parietes basales et laterales conidiomati 4-7 cellulis crassae, ex textura angulares hyalina ad palide brunea compositi. Conidiophora ad cells conidiogenas deminuta. Cellulae conidiogenae discreteae, hyalinae, laeves, lageniformes ad doliiformes, 4-10 μm longae, 2.5-4.5 μm latae basi, in vagina mucosa non persistentia involutae, semel vel ter enteroblastice proliferantes. Conidia holoblastica, ventricosa ad gibbosa in vivo, fusiformia ad ventricosa in vitro, aseptata, atrobrunnea, laevia vel striis longitudinalibus localibus, cum guttula centralia globo, apices apiculati ad obtusi. 18.5-23 × 8.5-10.5 μm (X = 21 × 9.5 μm), appendix basalis hyalina, non ramosa, 12.5-40 μm in foliis; conidia 13.8-25 × 6-7.5 μm (X = 20 × 6.3 μm), appendix 15-50 μm in cultura.


Foliicolous. Conidiomata stromatic, abundant, amphigenous, subepidermal, immersed, becoming erumpent and punctate, globose to subglobose, up to 250 μm diam., unilocular; area of dehiscence spuriously ostiolate, ostioles with furfuraceous margins; basal and lateral walls four to seven cells thick, composed of hyaline to pale brown textura angularis. Conidiophores reduced
to conidiogenous cells. Conidiogenous cells discrete, hyaline, smooth-walled, lageniform to doliform, 4–10 μm long and 2.5–4.5 μm wide at the base, invested in mucilage, which disappears with maturity, producing a single conidium or proliferating enteroblastically up to three times, channel wide, periclinal thickening minute, collarette present. Conidia holoblastic, ventricose and irregularly guttulate in vitro, fusiform to ventricose and irregularly guttulate in vivo, asperate, dark brown, smooth, nonstriate, or very finely striate in localized areas, guttulate, occasionally with longitudinal sections of paler pigment at the centers. Conidia were 13.8–25 × 6–7.5 μm (x = 20 × 6.3 μm), appendage 15–50 μm in culture. Mean conidium body length: width ratio 2.3:1 in vivo, 3:1 in vitro; microconidia not seen and no teleomorph known.

HOST: S. cordatum.


Cultures obtained from this collection sporulated on MEA, CLA and Eucalyptus leaf agar. Conidia retained their ventricose shape in culture but had less pigment and were slightly narrower than those observed in vivo. Optimum growth occurred at 25°C (Fig. 3).

It is surprising that there are yet more new species of Harknessia occurring on Eucalyptus. As conidium morphology of many of these species has been found to change on different media and with different conditions of incubation, objective techniques would ultimately prove to be more useful. However, there are clearly many species that remain to be described and mycologists are encouraged to collect these fungi.

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LITERATURE CITED


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