

***Crinipellis beninensis* (Basidiomycota, Marasmiaceae),  
a new species from Benin (tropical Africa)**

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A new species, *Crinipellis beninensis*, characterised by having a reddish grey to dull red, later paler, and at centre more brownish (greyish brown to reddish brown) pileus, rather small basidiospores, mostly coralloid or branched cheilocystidia, pileus and stipe hairs yellow-brown in H<sub>2</sub>O and KOH, and by the absence of pleurocystidia, is described. To date, it is known from two localities in Benin. The characters in which it differs from similar taxa are also discussed.

**Key words:** macromycetes, *Agaricales*, taxonomy, anatomic-morphological characters, tropical fungi.

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V článku je popsán nový druh, *Crinipellis beninensis*, pro který jsou charakteristickými znaky červenošedý až kalně červený, později světlejší a na středu výrazněji hnědší (šedavě až červenavě hnědý) klobouk, dosti drobné výtrusy, většinou na vrcholu korálovité nebo větvené cheilocystidy, chlupy na klobouku zbarvující se do (zelenavě) žlutohnědé ve vodě i v KOH a chybějící pleurocystidy. Dopsud byl sbírán na dvou lokalitách v Beninu. Jsou rovněž diskutovány rozdíly oproti podobným druhům.

#### INTRODUCTION

During studies of collections of tropical African *Crinipellis* and *Chaetocalathus* species for a planned monographic work by the first author (Antonín 2012b), several new taxa were discovered. Most of them have already been published (Antonín 2012a). However, after the acceptance of this manuscript, during the final preparation of the monograph text, a detailed description of one more new species collected by the second author was obtained. Therefore, this new species is published here.

MATERIALS AND METHODS

The macroscopic description based on fresh basidiocarps was compiled by the second author; microscopic features were studied under an Olympus BX 50 light microscope from dried material mounted in H<sub>2</sub>O, a 5 % KOH solution, Melzer's reagent and Congo Red. For basidiospores, the factors E (quotient of length and width in any one spore) and Q (mean of E-values) are used; 20 basidiospores of each collection were measured. For lamellae, L means the number of entire lamellae and l the number of lamellulae between each pair of entire lamellae. Authors of fungal names are cited according to the International Plant Names Index Authors website (<http://www.ipni.org/ipni/authorsearchpage.do>). Herbarium acronyms follow Thiers (2012), colour abbreviations Kornerup & Wanscher (1983).

RESULTS

***Crinipellis beninensis* Antonín & De Kesel sp. nov.**

Figs. 1–3

(Mycobank MB 801198)

*Diagnosis latina.* Pileo 10–30 mm lato, convexo vel plano-convexo, rubro-griseo vel rubro. Lamellis distantibus, rubro-albidis, acie concolore. Stipite usque 10–15 × 1 mm, ad basin attenuato, villosa, apicem albido, ad basin brunneo. Basidiosporis 7,0–10(12) × 3,5–5,5 µm ellipsoideis, ellipsoideis-fusiformibus. Cheilocystidiis 14–40 × 5,0–9,0(11) µm, clavatis, subutriformibus, fusiformibus, apicem coralliformibus vel cum projectionibus. Pleurocystidiis absentis. Setis pilei et stipitis usque c. 400(1000) × 3,0–10 µm, cylindraceis, crassitunicatis.

*Holotypus.* Benin, Niaouli, 13 June 1999 leg. A. De Kesel 2525 (BR 112900-89).

*Etymology.* “*beninensis*” refers to the name of the tropical African country Benin.

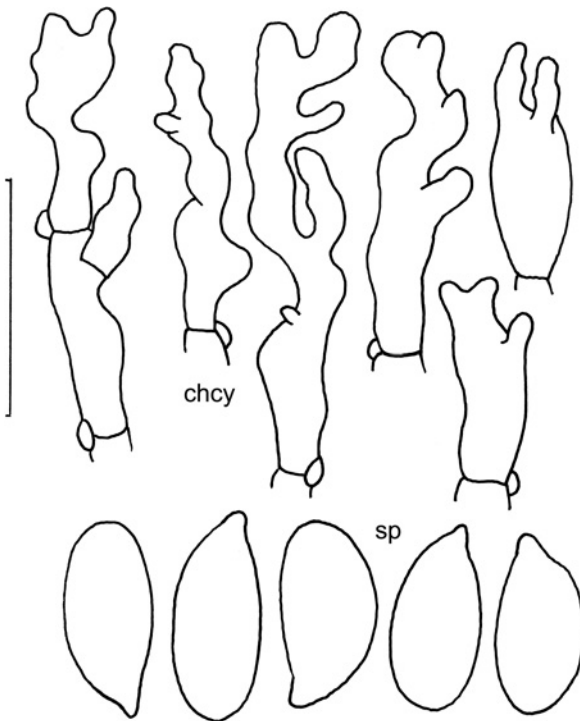
Pileus 10–30 mm broad, convex at first, then plano-convex, plane to depressed at centre, striate-sulcate up to 1/3 or 1/2 of diam. especially when old, entirely shortly hairy, becoming squamulose especially at centre, reddish grey to dull red (10B2–10C3), becoming paler with age, centre becoming more brownish (greyish brown to reddish brown, 8D3–8D4), glabrescent from margin, which is eroded when old. Lamellae distant, L = 17–23, l = 1–2, free, forming a false collarium, horizontal, thin, up to 1.5 mm broad, veined, reddish white (8A2), with almost whitish pubescent edge. Stipe up to 10–15 × 1 mm, tapering downwards (to a width of 0.5 mm), hairy at the base, less distinctly hairy towards apex, almost white to yellowish white at apex, brownish towards the base. Context elastic, fibrous, thin in pileus.

Basidiospores 7.0–10(12) × 3.5–5.5 µm, average 8.3 × 4.5 µm, E = 1.56–2.14, Q = 1.77–1.91, subfusoid, ellipsoid-fusoid, thin- or slightly thick-walled, non-dextrinoid. Basidia 26–35 × 8.5–10 µm, 4-spored, clavate. Basidioles 15–35 × 3.0–10 µm, clavate, cylindrical, subfusoid. Cheilocystidia 14–40 × 5.0–9.0(11) µm,



**Fig. 1.** *Crinipellis beninensis*. Basidiocarps (ADK 2525, holotype). Scale bar = 30 mm. Photo A. De Kesel.

**Fig. 2.** *Crinipellis beninensis*. Basidiocarps (ADK 2781). Scale bar = 30 mm. Photo A. De Kesel.



**Fig. 3.** *Crinipellis beninensis*. **chcy** – cheilocystidia, **sp** – basidiospores. Scale bar: 20  $\mu$ m for cheilocystidia, 10  $\mu$ m for basidiospores.

clavate, subutriform, fusoid, mostly with coralloid or branched apical projections, thin-walled. Pleurocystidia absent. Trama hyphae cylindrical to subinflated, thin-walled, non-dextrinoid, up to 17  $\mu\text{m}$  wide. Pileipellis (hypotrachium – layer under the pileus hairs) of  $\pm$  cylindrical, thin- to slightly thick-walled, distinctly incrustated, up to 15  $\mu\text{m}$  wide cells. Pileus hairs up to about 400(1000)  $\times$  3.0–10  $\mu\text{m}$ , cylindrical, subulate, thick-walled (walls up to 4.0  $\mu\text{m}$ ), obtuse, septate, dextrinoid; walls (greenish?) yellow-brown in  $\text{H}_2\text{O}$  and KOH. Stipitipellis a cutis of cylindrical, slightly thick-walled, dextrinoid, up to 7.0  $\mu\text{m}$  wide hyphae with yellow-brown walls in  $\text{H}_2\text{O}$  and KOH. Stipe hairs similar to pileus hairs, but smaller, 15–200  $\times$  3.0–9.0  $\mu\text{m}$ . Clamp connections present.

**Ecology and distribution.** The specimens were collected in the 150 ha large forest reserve of the National Agricultural Research Station of Niaouli situated 3 km west of the village of Attogon (Province Atlantique, 50 km north of Cotonou). *Crinipellis beninensis* was found in two different forest types. One is a rather dry, semi-deciduous forest (called plateau forest) dominated by *Ceiba pentandra* (*Bombacaceae*) and *Triplochiton scleroxylon* (*Sterculiaceae*). The other one is more diverse, evergreen and irrigated by a number of wells and intersected by the Ava rivulet. This evergreen forest (called bas-fond forest) is very often inundated and hosts among others *Cola gigantea*, *C. millenii*, *C. nitida* (*Sterculiaceae*), and *Entandrophragma angolense* (*Meliaceae*). In both these forests *Crinipellis beninensis* prefers the denser areas with a deep shade. It grows singly or in small bundles (2–3 basidiocarps) on tiny fallen twigs of small lianas and shrubs. So far, it has been collected only in Benin.

**Specimens examined.** Benin. – Attogon (Prov. Atlantique), Niaouli Research Station, plateau forest plot, 6°44'00.30"N, 2°08'20.81"E, alt. 103 m, 13 June 1999 leg. A. De Kesel, ADK 2525 (BR 112900-89, holotype). – Attogon (Prov. Atlantique), Niaouli Research Station, bas-fond forest plot, 6°44'36.60"N, 2°08'43.20"E, alt. 69 m, 12 June 2000 leg. A. De Kesel, ADK 2781 (BR 126334-40).

## DISCUSSION

*Crinipellis beninensis* is characterised in having a reddish grey to dull red, later paler, and at centre more brownish (greyish brown to reddish brown) pileus, rather small basidiospores, mostly coralloid or branched cheilocystidia, walls of pileus and stipe hairs (greenish?) yellow-brown in  $\text{H}_2\text{O}$  and KOH, and by the absence of pleurocystidia. Both collections are both macro- and microscopically fully identical but differ from each other in the size of the basidiospores – collection ADK 2781 has 7.0–8.5  $\times$  3.5–4.7  $\mu\text{m}$  large, ADK 2525 8–10  $\times$  4.0–5.5  $\mu\text{m}$  large basidiospores. Therefore, the variability of basidiospores appears to be rather large.

Among tropical African species without pleurocystidia, *Crinipellis calderi* Pegler differs by a burnt umber to fuscous-black pileus, becoming light vinaceous

cinnamon or greyish orange at margin, a larger (13–35 × 1–2 mm) stipe with a fuscous black base, larger (12–15 × 5.0–6.5 µm) basidiospores, and only poorly differentiated cheilocystidia (holotype K(M) 147486 revised; Pegler 1966). *Crinipellis nsimalensis* Antonín et al. has a brown fibrillose-squamulose pileus, a larger (25–60 × 1–2 mm) stipe which is dark brown towards base, and larger (9.5–11(12) × (4.0)4.5–5.5(6.5) µm) basidiospores (holotype BRNM 666071 revised; Antonín 2012a). *Crinipellis ghanaënsis* Singer especially differs by a pileus with chestnut-brown hairs, and a concolorous stipe (holotype K(M) 147479 revised; Pegler 1967). *Crinipellis kisanaganensis* Antonín & Buyck has a small (only 5–7 mm broad), dark brown pileus covered with dark brown hairs, a greyish brown stipe with dark brown hairs, narrower (8.0–10 × 3.5–4.75 µm) basidiospores and smaller ((12)15–26 × 4.5–9.0 µm) cheilocystidia (holotype BR 011744-07 revised; Antonín 2012a). *Crinipellis ochracea* Antonín & De Kesel differs by a small, 2–7 mm broad, brownish then beige, hairy pileus with a central papilla, a stipe which is dark brown to grey-brown, in old specimens almost black-brown towards base, and simple, irregular cheilocystidia, without or just a few apical projections (holotype BR 101093-19 revised; Antonín 2012a).

Among other African species, *Crinipellis minutula* (Henn.) Pat. has a smaller, up to 15 mm broad pileus, smaller (6.5–8.75 × (3.0–)3.5–4.5 µm) basidiospores, and simple cheilocystidia. *Crinipellis pseudosplachnoides* (Henn.) Singer also has a smaller, 7–15 mm broad, pale brown pileus and a long stipe (10–40 × 1–2 mm). *Crinipellis pseudostipitaria* Singer also has a smaller, 7–14 mm broad, brown or fulvous brown pileus and stipe and broader ((8.0)8.5–11 × 5.5–7.0(7.5) µm) basidiospores. Moreover, the last three mentioned species all have well-developed pleurocystidia (Antonín 2012, Singer 1943).

Among extra-African species with a purple or reddish coloured pileus and without pleurocystidia, *Crinipellis brunneipurpurea* Corner, known from Indonesia and Malaysia, has a smaller, only 2–7 mm broad pileus, a violet-brown to dark ruby-coloured stipe, larger basidiospores (10–14 × 3–5 µm), and mostly simple or at most bifurcate cheilocystidia (Corner 1996, Kerekes & Desjardin 2009). *Crinipellis dipterocarpi* f. *cinnamomea* Kerekes et al., collected in Indonesia, Malaysia and Thailand, also has a smaller, 1–11 µm broad, reddish brown to cinnamon, later light brown pileus, and smaller cheilocystidia (9–20 × 5–7 µm) with simple projections (Kerekes & Desjardin 2009). *Crinipellis tabtim* Kerekes et al., described from Thailand, differs by a smaller, 1–11 mm broad pileus, basidiospores 8–11 × 4–5.5 mm large with a different Q-ratio (Q = 2.3) and smaller cheilocystidia (10–20 × 5–9 µm) with simple projections (Kerekes & Desjardin 2009).

*Crinipellis purpurea* Singer, collected in Columbia and Bolivia, differs by having a smaller, 6–8 mm broad, purple red pileus with a dark purple to purple-black centre, a concolorous or vinaceous stipe, narrower basidiospores (6.5–10.3 × 3–4.7 µm), and clavate, rarely filamentous or cylindrical cheilocystidia, sometimes with apical

digitate projections; *C. insignis* Singer, described from Bolivia, by a purple or purplish pink pileus, a not more than 9 mm long, yellow and purple coloured stipe, larger basidiospores ( $10.5\text{--}13.5 \times 4.5\text{--}6.5 \mu\text{m}$ ), and scattered, simple cheilocystidia; *C. eggersii* Pat., collected in Ecuador, Bolivia and Argentina, by a purple to violet purple pileus, a short and more robust,  $2\text{--}15 \times 0.4\text{--}3$  mm large stipe, larger basidiospores ( $(7)11\text{--}13 \times (4)5.5\text{--}6.3(7.5) \mu\text{m}$ ) (Patouillard & Lagerheim 1893, Singer 1976); *C. siparunae* Singer, from Cuba and Brazil, by a lilac, brownish lilac or vivid pink pileus, and larger ( $9\text{--}14 \times 4.5\text{--}8 \mu\text{m}$ ) basidiospores (Singer 1976).

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