



Blumenavia angolensis (Clathraceae), a rare phalloid reported from Northeastern Brazil

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Abstract

Recent studies in the Atlantic Forest in Northeastern Brazil revealed a rare species, *Blumenavia angolensis* that is fundamentally distinguished by its black peridium and yellowish white receptacle with membranous glebifers. Description, comments and comparison with similar species, photograph of the fresh basidiomata, and SEM photographs of basidiospores are given. This is the first report of the genus *Blumenavia* from Northeastern Brazil.

Key words – Basidiomycota – Gasteromycetes – Neotropics – Phallales – Taxonomy

Introduction

The order Phallales was established by Fischer (1898–99) and comprises two families: Clathraceae and Phallaceae. Clathraceae was proposed by Chevallier (1926) and consists of latticed fungi, with receptacle composed of spongy, tubular and hollow arms. According to Pegler & Gómez (1994) this family consists of twelve genera, including the genus *Blumenavia*. Clathraceae was emended by Cabral et al. (2012) that proposed a new genus, *Abrachium* (Baseia & Calonge) Baseia & T.S. Cabral and the lack of arms led an emendation in this family.

The genus *Blumenavia* was originally described from Santa Catarina state, Brazil (Möller 1895) based on *B. rhacodes* Möller. The occurrence of *Blumenavia* in Brazil is not common, consisting of a few records from the south of the country. Recently, López & García (2001, 2012) reported *B. rhacodes* from Mexico, expanding the distributional area of this group. Only two species, *B. rhacodes* and *B. angolensis* (Welw. & Curr.) Dring, were considered in this genus by Dring (1980). A third species, *B. toribiotalpaensis* Vargas-Rodriguez was described recently from Mexico (Vargas & Vazquez 2005).

Blumenavia is segregated from the close genera *Clathrus* P. Micheli ex L. fundamentally by the membranous glebifers attached by one side to each of the two inner angles of the column (Dring 1980, Sáenz 1980). Given the lack of information on the species richness of this noteworthy group of gasteroid fungi, our aim was to expand knowledge of this genus in a native area of Northeast Brazil.

Materials & Methods

Collections were made in July 2012 at the Área de Proteção Ambiental (APA) of Serra de Baturité (S 04°08'–04°30'; W 38°50'–39°05'), located in Ceará state. Basidiomata were examined



Figs 1–4 – *Blumenavia angolensis*. 1 Unexpanded basidioma. 2 View of glebifer; 3, 4. Mature basidioma. This picture is copyright of Ana Clarissa Moura Rodrigues.

and photographed in the field. Color determination was referenced according to Kornerup & Wanscher (1978). Macroscopic and microscopic studies were based on Dring (1980) and Lopez et al. (1981). Collections were deposited in the UFRN herbarium.

Results

Blumenavia angolensis (Welw. & Curr) Dring., Kew Bull. 35(1): 53 (1980)

Figs 1–8

Immature globose basidioma, 27 mm in diameter, exoperidium black, basal portion attached to a thick, white rhizomorph. Receptacle fragile, spongy, urceolate, 83–91 mm high × 30–35 mm wide, ranging from yellowish white (KW 1A2) when fresh and grayish yellow (KW 4B4) to orange (KW 5B4) when dry, expanding into four anastomosed arms at the apex; arms exhibiting small perforations and locules. Gleba brown (KW 6E4) and dark brown (KW 6F4) when fresh, to black (KW 6F1) when dry, spread over the glebifers. Glebifer membranous, surface wrinkled, located on the upper part of the arms and attached to the inner lateral portions.

Basidiospores bacilliform, 3.1–3.6 μm long × 1 μm wide, hyaline in KOH (5%), smooth, exhibiting two gutules at each end. Receptacle exhibiting globose to subglobose cells, 17.8–33 μm × 11.4–27.9 μm, hyaline. Glebifer displaying globose to subglobose and ovoid cells, 8.7–21.4 μm × 8.2–19.4 μm, hyaline. Volva composed of filamentous hyphae.

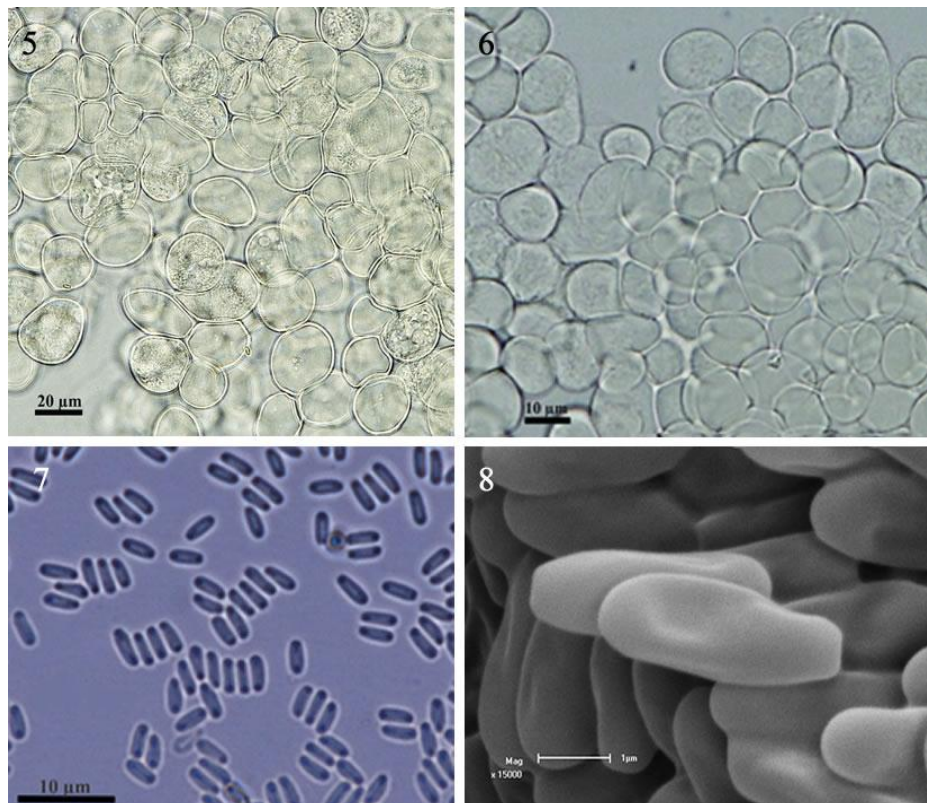
Known distribution – Africa (Dring 1980, Degreeef et al. 2013); Caribbean (Dring 1980); North America (Metzler et al. 1992); South America (Dring 1980, Bononi et al. 1981, Meijer 2006).

Material examined – Brazil, Ceará, Guaramiranga, Track of Veadeiros, S 04°15'18.8'' W 38°55'52.3'', 865 m, 07 Jul 2012, A.C.M. Rodrigues & T.L.D. Silva, UFRN – Fungos 1943.

Discussion

The specimens analysed have similar characteristics to those observed in *Blumenavia angolensis* (Welw. & Curr) Dring, such as immature basidiomata with black peridium and yellowish white receptacle, in addition to the presence of membranous glebifers, attached laterally to the upper part of the arms. When our specimens are compared with *B. rhacodes*, considerable differences can be seen, such as the shape of the egg, which is ellipsoid in *B. rhacodes* and globose in our specimens. Furthermore, the receptacle is orangish and striate in *B. rhacodes*, which does not occur in the specimens studied. Other differences include the shape of the tubes inside the receptacle, which are triangular and trapezoid in *B. rhacodes* and circular in our specimens. The glebifers in the specimens studied are distributed only on the upper portion of the arms, a trait present in *B. angolensis*. *Blumenavia toribiotalpaensis* Vargaz-Rodriguez, a species described for Mexico (Vargas & Vazquez 2005), exhibits very similar characters to those of *B. rhacodes*, and is considered a synonym of this species by a number of authors (López & García 2012).

Dring (1980) cites some subtle differences between the African and South American species of *Blumenavia angolensis*, such as egg colour and spore size. The African specimens of *B. angolensis* display slightly larger spores ($6\ \mu\text{m} \times 2\ \mu\text{m}$) when compared to the South American specimens ($3\text{--}3.5\ \mu\text{m} \times 1.5\ \mu\text{m}$). The spores of the specimens analysed in the present study have the same dimensions as those described in South American species by Dring (1980) and Degreeef et al. (2013). Thus, our specimens lie within the concept of *Blumenavia angolensis*. This is the first record of the genus for Northeast Brazil and the third of *B. angolensis* for South America.



Figs 5–8 – Microscopic characteristics. 5 Receptacle cells. 6 Glebifer cells. 7 Spores under light microscope. 8 Spores under SEM. This picture is copyright of Ana Clarissa Moura Rodrigues.

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