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Puccinia reynoldsii sp. nov. on *Clerodendrum* (Lamiaceae) from Burma

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ABSTRACT: *Puccinia reynoldsii* sp. nov. is a new species encountered during mycological exploration on *Clerodendrum indicum* Kuntze from central Burma in the Pyinmana and the Gyobingauk townships. In this report, *P. reynoldsii* is described, illustrated, and discussed, based on traditional taxonomic tools.

KEY WORDS: Biotroph, obligate parasite, Pucciniales, systematics, Uredinales.

INTRODUCTION

This paper presents a new *Puccinia* species occurring in spots on leaves of a wild plant, *Clerodendrum indicum* Kuntze (= *C. siphonanthus* R. Br. = vernacular *Nga.ran°.pa.tu*), from central Burma in the Pyinmana and the Gyobingauk townships (Thaung, 2005). The novel rust fungus exhibits neither spines on the teliospore nor appendages arising from the spore pedicel unlike *Prospodium erebia* (Syd. & P. Syd.) Bagyan. & Ravinder reported on *Clerodendrum commersonii*, *C. fragrans*, *C. inerme* and *C. minahassae* from South Asia, Southeast Asia, East Asia and Papua New Guinea, and *Prospodium tirumalense* Bagyan., Ravinder & P. Ramesh as '*tirumalensis*' on *C. inerme* recorded from India.

This new rust also differs in morphology and taxonomy from several other rust fungi globally associated with *Clerodendrum* host plants including *Aecidium clerodendri* Henn., *A. clerodendricola* Henn., *A. clerodendri-fragrantis* J.M. Yen, *A. clerodendri-serrati* J.Y. Zhuang, *Caeoma clerodendri* Racib., *Cerotelium daedaloides* Cummins, *C. peregrinum* (Syd., P. Syd. & E.J. Butler) Arthur, *Coleosporium clerodendri* Dietel, *C. euphrasiae* (Schumach.) G. Winter (= *C. tussilaginis* f. sp. *rhinanthacearum*), *Endophyllum superficiale* (P. Karst. & Roum.) F. Stevens & Mendiola, *Hemileia scholzii* Syd. (= *Uredo scholzii* Henn.), *Uredo clerodendricola* Henn. and *U. clerodendrina* Vienn.-Bourg (http: //nt. ars-grin. gov/ fungaldatabases/ fungushost/new_frameFungusHostReport.cfm). It is therefore described as a new *Puccinia* species.

MATERIALS AND METHODS

Field collections were made in the Pyinmana and the Gyobingauk townships. Specimens were deposited in Herb. LAM (=UC) and PDD. The material was first examined in situ through a binocular dissecting microscope for gross morphological characters. They were then cut while fresh with a razor blade for freehand sections, and the best sections selected, teased or squashed in water, or after rehydration in 3% potassium hydroxide, if dry, for a preliminary examination under a binocular Leitz Laborlux D research microscope. Final observations were made in lactophenol or chloral hydrate solution, warmed gently to expel trapped air and to speed up clearing action, for examination with transmitted light of micro-characters at 400-630X. Cotton blue stain was used for hyaline structures. The specimen was identified to the genus *Puccina* Pers. of the rust fungus family Pucciniaceae based on teliospores being smooth and pedicels simple and smooth (Saccardo, 1888). Its status as a new species is circumscribed here under taxonomy.

TAXONOMIC TREATMENTS

Puccinia reynoldsii Thaung *sp. nov*.

Figs. 1-4.

MycoBank no.: MB 563436

Maculae amphiphyllae, inconstanter rotundatae, margines purpureo cinctae, circa 4-8 mm diam., solitariae vel confluentiae, superne marcescente, nigrescente, inferne deinde brunneae. Pycnia et aecia ignota. Uredinia haud visa. Telia hypophylla, medium macularum dilute brunnearum rotundarum disposita, dispersa vel laxe gregaria, erumpentia. Teliosporae vulgo 50-65 × 20-25 µm, interdum usque 120 × 56 µm quom immaturae, bicellulae, plerumque ellipsoidae vel interdum breviter oblongae, ad septum modice constrictae, superne conico-acutae vel rotundatae, inferne attenuatae, membrana 3-4 µm crassa, levi, brunnea, non germinantes, pedicello vulgo persistenti, sporam aequante vel plerumque breviore, interdum

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Fig. 1. ***Clerodendrum indicum*** **Kuntze leaves with subglobose spots of rust. Bar = 1.5 cm.**

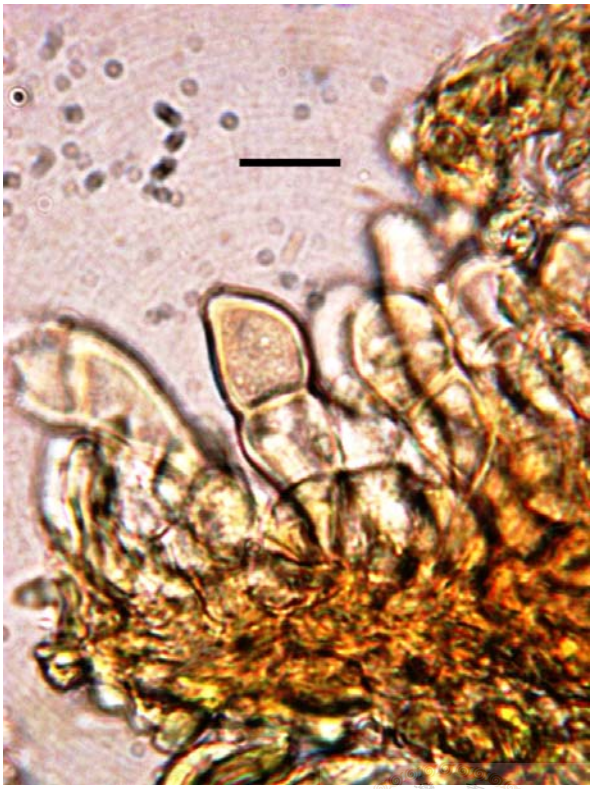


Fig. 2. ***Puccinia reynoldsii*** **– Telium with young teliospores. Bar = 30 μm.**

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Fig. 3. *Puccinia reynoldsii* – Young developing teliospores. Bar = 30 µm

oblique affixo, attenuato, simplici, hyalino; mesosporae 25-30 × 20-25 µm, unicellulae.

Holotypus: BURMA, Pyinmana, on leaves of *Clerodendrum indicum* Kuntze (Lamiaceae), 13 Dec 1977, leg. et det. *Maung Mya Thaung* (LAM (=UC) *220424*-III-holotypus, PDD 56247-III-isotypus); BURMA, Gyobingauk, on leaves of *Clerodendrum* sp. (Lamiaceae), 18 Dec 1977, leg. et det. *Maung Mya Thaung* (LAM (=UC) *220978*-III-paratypus).

Spots on both sides of leaf, subglobose, pinkish to purplish at margin, about 4-8 mm diam, separate or coalescing, fading to dark grey above, becoming brown below (Fig. 1). Pycnia and aecia unknown. Uredinia not seen. Telia hypophyllous, dispersed or loosely grouped, becoming erumpent. Teliospores generally 50-65 × 20-25 µm, sometimes up to 120 × 56 µm when immature, 2-celled, mostly ellipsoid or occasionally short-oblong, moderately constricted at septum, conic-acute to round above, attenuate below, wall 3-4 µm thick, smooth, brown, not germinating, pedicel commonly persistent, equal to spore in length or generally shorter, sometimes obliquely attached, attenuate, simple, hyaline; mesospores 25-30 × 20-25 µm, 1-celled (Figs. 2-4).

Etymology: Named after Dr Don R. Reynolds, Research Botanist, Herbarium, University of California, Berkeley, for his enthusiastic support for the study of fungi from Burma.

DISCUSSION

Puccinia reynoldsii sp. nov. produces mesospores



Fig. 4. *Puccinia reynoldsii* – Teliospores and mesospores. Bar = 30 µm.

just like *Prospodium tirumalense*, but differs from *Prospodium erebia* and *P. tirumalense* in having smooth teliospores and simple, smooth pedicels. Moreover, it utilizes an entirely distinct host plant species, *Clerodendrum indicum*, in Lamiaceae while *Prospodium* rusts are geographically restricted largely to the Americas and the Caribbeans on Bignoniaceae and Verbenaceae (Cummins and Hiratsuka, 2003).

LITERATURE CITED

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緬甸於大青屬（*Clerodendrum*）植物體上的新種銹菌 – *Puccinia reynoldsii*

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摘要：在一次真菌調查中，於中緬甸的 Pyinmana 及 the Gyobingauk 鎮，長管大青（*Clerodendrum indicum* Kuntze）這種植物上發現一新種銹菌 – *Puccinia reynoldsii*。本文提供該新種之描述、圖片並進行討論。

關鍵詞：活體營養生物、絕對寄生菌、柄銹菌目、系統分類學、銹菌目。

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