

REPORT OF *Puccinia lantanae* ON *Lippia alba* IN THE STATE OF BAHIA, BRAZIL

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Leaves of *Lippia alba* showing typical symptoms and signs of rust were collected in the Medicinal Herb Garden at UESC. Analysis confirmed the pathogen as *Puccinia lantanae*. This is the first report of this fungus on *L. alba* in the State of Bahia, Brazil.

Key words: rust, medicinal plants

Relato de *Puccinia lantanae* em *Lippia alba* no Estado da Bahia, Brasil. Folhas de *Lippia alba* apresentando sintomas e sinais típicos de ferrugem foram coletadas no Horto de Plantas Medicinais da UESC. Análises estruturais confirmaram a identificação do patógeno como *Puccinia lantanae*. Este é o primeiro relato desse fungo sobre *L. alba* no Estado da Bahia, Brasil.

Palavras-chave: ferrugem, plantas medicinais

Lippia alba (Mill.) N.E. Brown (Verbenaceae) is widely used as medicinal plant in Brazil and South and Central American countries. In Brazil its local name is “erva-cidreira”, “alecrim-do-campo” or “alecrim-selvagem” (Martins et al., 1995), it’s used mainly for its soothing effects, also showing antimicrobial, antispasmodic and anti-inflammatory activity (Aguiar et al., 2008). Sometimes it’s mistaken for *Melissa officinalis* L. (Lamiaceae), popularly known as “ervadoce”, an herb with some similar effects. *Lippia alba* presents secondary metabolites such as flavonoids, tannins, saponins and terpenoids, the latter preventing against oxidative damage (Azambuja et al., 2011). The properties of the essential oil of *L. alba* have been the focus of several research works (Parodi et al., 2011; Salbego et al., 2014; Soares et al., 2015).

Some phytopathogenic fungi were related causing damages on *Lippia* spp. in Brazil, including species of *Aecidium* Pers., *Alternaria* Nees, *Cercospora* Fresen., *Corynespora* Güssow, *Elsinoë* Racib., *Passalora* Fr., *Pseudocercospora* Speg., *Prospodium* Arthur and *Puccinia* Pers. (Mendes et al., 1998; Farr & Rossman, 2017). *Puccinia* belongs to Pucciniaceae (Pucciniales, Basidiomycota), and this family comprehends the majority of rust fungi, a group among the most economically important pathogens (Agrios, 2005). This genus is the most diverse of the family, with more than 4.000 species known (Kirk et al., 2008).

In October 2016 symptomatic leaves of *Lippia alba* showing necrotic areas and blackish pustules were collected in the Medicinal Herb Garden at the Universidade Estadual de Santa Cruz (Ilhéus, Bahia, Brazil), and taken to the Plant Pathology and Nematology Laboratory. After dry the leaves in wooden press for four days, the affected tissue and reproductive structures of the plant pathogen were analyzed in stereomicroscope and light microscope according to Carvalho Júnior & Hennen (2012). The exsiccate were deposited in the Tropical Fungarium (TFB).

Puccinia lantanae Farl., Proc. Amer. Arts & Sci. Acad. 18: 83. 1883. (Figure 1).

= *Dicaeoma lantanae* (Farl.) Kuntze, Rev. gen. pl. (Leipzig) 3(2): 469 (1898).

= *Micropuccinia lantanae* (Farl.) Arthur & H.S. Jacks., Bull. Torrey bot. Club 48: 41 (1921).

Lesions round, brown, circled by a yellowish halo, on the upper surface of the leaves (Figures 1 a-b). Spermogonia, aecia, and uredinia not produced. Telia subepidermal, erumpent, blackish brown, variable size (0.5 to 3 mm in diameter) (Figures 1-c); teliospores one-celled, subepidermal, (48-) 54-76 × 19-20 µm with pedicel, which is persistent and colorless, chestnut brown, surface smooth, varying in shape, globoid, ellipsoid, pyriform (Figures 1-d); teliospores two-celled by horizontal septum, in a few number, subepidermal, 63-75 × 16-20 µm with pedicel, chestnut brown, surface smooth, varying in shape, constricted in the septum (Figures 1-e).

Material examined: BRAZIL. BAHIA: Itabuna, Bairro de Fátima (14°58’76’S, 39°28’03’W), 07.I.2007, leg. J.L. Bezerra 457, on leaves of *Lippia alba* (CEPEC-Fungi 672); Ilhéus, CEPLAC/PROSEC (14°78’89’S, 39°041’94’W), 24.V.2012, leg. J.L. Bezerra 1379, on leaves of *L. alba* (CEPEC-Fungi 2390); Ilhéus, Campus da UESC, Horto de Plantas Mediciniais (14°47’47.79’S, 39°10’19.68’W), 15.X.2016, leg. Jad. Pereira & C.S. da Silva, on living leaves of *L. alba* (TFB 685).

Comments: *Puccinia lantanae* was established from material collected in Bermuda on *Lantana odorata* L. (Farlow, 1883) and is a microcyclic species (Cummings & Hiratsuka, 2003). After, other reports of this fungus were made to South America and Brazil (Viégas, 1961; Hennen et al., 2005). In Brazil, *P. lantanae* was reported previously on *Lippia alba* in the States of Paraná (Schuta et al., 1997), probably in São Paulo (Russomano & Kruppa, 2010), and Distrito Federal (Castro, 2012). Despite Thurston (1940) related *P. lantanae* on *Lan. trifolia* L. in State of Minas Gerais, only sixty-four years after this fungus was recorded on *L. alba* by Lima et al. (2004).

Puccinia lantanae was collected on *Lan. camara* L. in the Southeast Bahia, municipality of Floresta Azul in November 1996 (Pereira & Barreto, 2001). Although this rust fungus had been collected respectively in 2007 and 2010 on *L. alba* in the municipalities of Itabuna and Ilhéus, Bahia, by J.L. Bezerra, no published reports of this were found. In the HURB Herbarium there is a sample of *P. lantanae* on *Lan. cf. canescens* Kunth (HURB 12388), collected in 2011 at “Serra da Jibóia” (Reconcavo region of the Bahia state) A specimen of *Campomanesia* sp. (Myrtaceae) parasitized by *P.*

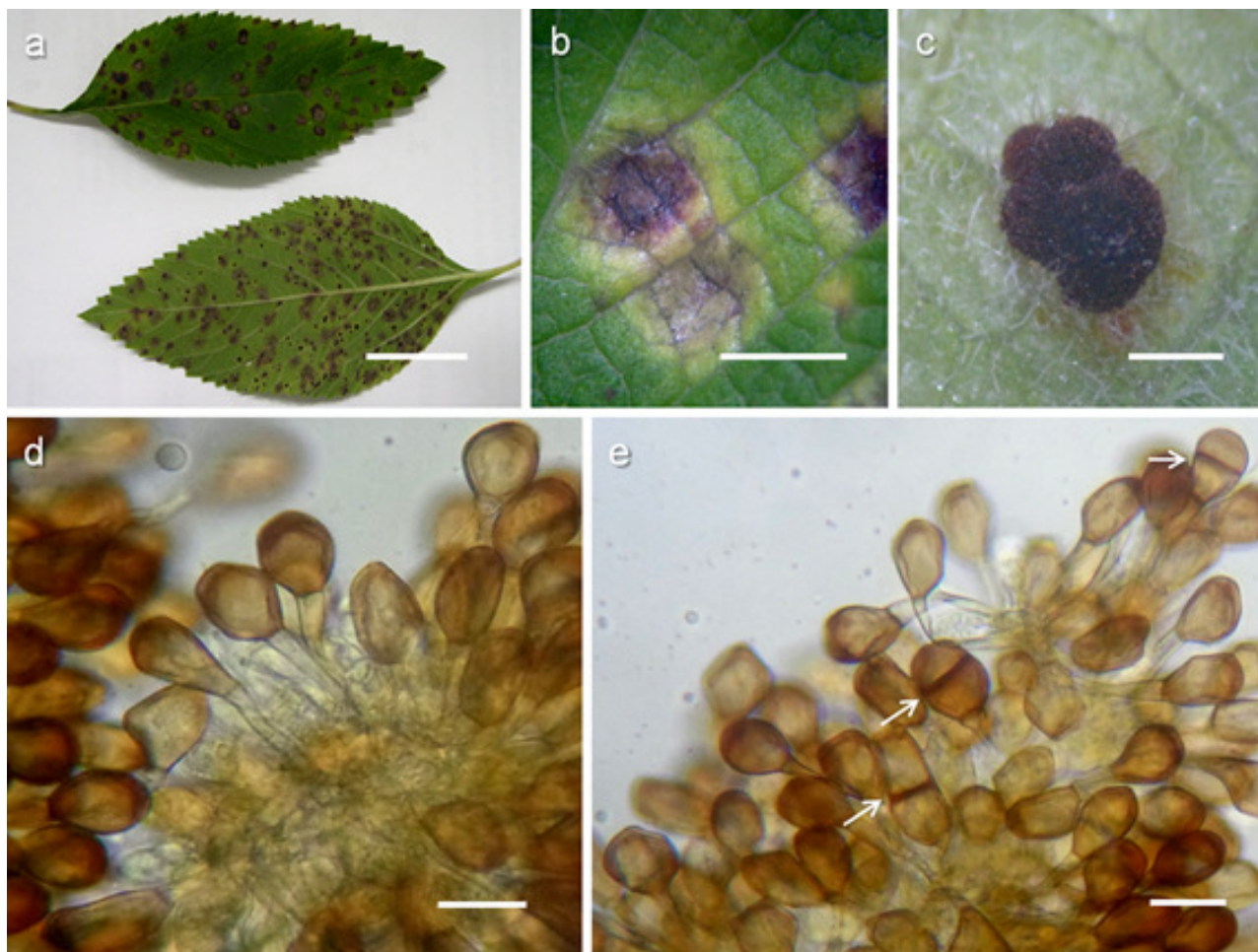


Figure 1. *Puccinia lantanae* on *Lippia alba*. a – Upper and lower surface of leaves with symptoms and signs of rust. b – Maximized view of upper leaf surface evidencing lesions. c – Telium. d – One-celled teliospores. e – Two-celled teliospores (arrows). Bars: a = 2 cm; b = 2 mm, c = 0.25 mm; d, e = 20 μ m.

lantanae is recorded in the URM Herbarium collection (URM 26197). Curiously, the late exsiccate was collected in the municipality of Santo Amaro, Bahia, and no publications about this fungus on *Campomanesia* or other Myrtaceae were found. There are papers only for *P. psidii* G. Winter on *C. adamantium* (Cambess.) O. Berg., *C. aurea* O. Berg. and *C. guaviroba* (DC.) Kiaersk. (= *C. maschalantha* (O. Berg) Kiaersk. ex Engl. & Prantl) (Hennen *et al.*, 2005; Farr & Rossman, 2017).

Puccinia lantanae was also listed by Viégas (1961) and Hennen *et al.* (2005) as occurring in other Brazilian localities and plants: Acanthaceae: *Elytraria acaulis* (L.f.) Lindau, Goiás; Verbenaceae: *Lantana camara*, Maranhão, Paraíba, Pernambuco, Rio Grande do Sul, São Paulo; *Lan. montevidensis* (Spreng.) Briq., Rio

Grande do Sul; *Lan. nivea* Vent., São Paulo; *Lan. robusta* Schauer, Santa Catarina; *Lan. trifolia*, Minas Gerais, São Paulo; *Lantana* sp., Bahia, Minas Gerais, Paraíba, Rio de Janeiro, São Paulo; *Lippia aristata* Schauer, Minas Gerais; *L. brasiliensis* (Link) T.R.S. Silva, São Paulo; *L. rhodocnemis* Mart. & Schauer, Rio de Janeiro; *Lippia* sp., São Paulo.

Puccinia lantanae seems to have affinity with the families Acanthaceae and Verbenaceae, having several species of both as hosts, especially Acanthaceae, once this fungus has been reported as a pathogen from at least 10 genera around the world (Laundon, 1963; Gjaerum, 1986; Hennen *et al.*, 2005).

This is the first report of *P. lantanae* on *L. alba* in the State of Bahia.

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