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**SHORT COMMUNICATION**

# *Leucocoprinus birnbaumii* (Agaricales: Basidiomycota), attractive yellow houseplant mushroom, revisited after 100 years

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**Abstract:** Sulphur yellow color fruiting bodies of a mushroom at several stages of development were found growing indoors, on decaying mosses (peat) inside a glass box in the University premises at Peradeniya in November 2018. The fungus was examined and identified by its morphological features, described previously, as *Leucocoprinus birnbaumii.* The present paper reports *L. birnbaumii* 110 years after its first record in Ceylon and describes its morphology using growth stages and color images for easy recognition.

***Keywords:*** Houseplant mushroom, Agaricaceae.

## INTRODUCTION

The "yellow houseplant mushroom" was first described in 1785 and named as *Agaricus luteus* (Bolton, 1788) invalidly as that epithet is already used. Corda (1839) described the same species, based on specimens as *Agaricus birnbaumii.* The species was transferred to the genus *Leucocoprinus* establishing its scientific name as *Leucocoprinus birnbaumii* in 1961 (Singer, 1962). This attractive fungus is commonly known as yellow houseplant mushroom, yellow parasol, flower-pot parasol or plant-pot dapperling.

The earliest record of the fungus in Sri Lanka (then Ceylon) was in 1844 (Gardener 47, illustrations only), the specimens were collected on the ground in Peradeniya (Kandy District, Central Province), followed by Thwaites in November 1867 and 1869 amongst decayed herbs, also from Peradeniya. Berkeley (1847:481, Berkeley & Broome (1871:499), and Petch (1910:383) referred this mushroom species to *Agaricus cepaestipes*. The mushroom is said to be common in the tropics and subtropics and frequently occurs in flowerpots but last recorded in 1910 in Sri Lanka (Petch, 1910). This is the first record of the fungus in Sri Lanka after 1910 and also as *L. birnbaumii,* the currently accepted valid name. It can make a beautiful addition to the household flora.

*Leucocoprinus birnbaumii* was described, using morphological characteristics and line drawings, by Pegler in his book, Agaric Flora of Sri Lanka (1986) that illustrates early records of agarics in Ceylon mostly by Berkeley & Broome (1870, 1871 and 1873). There are no photographic illustrations of fruit bodies of this common and interesting species of *L. birnbaumii* in Sri Lanka. The present paper reports the occurrence of *L. birnbaumii* 110 years after its first record in Ceylon and describes the morphology of this attractive garden mushroom of Sri Lanka using various growth stages and color images for its easy recognition.

## MATERIALS AND METHODS

The study material was found growing indoors on decaying mosses (peat) placed in a medium-sized (18 x 24 x18 inch$^3$), square, glass tank at the Department of Botany, University of Peradeniya, Peradeniya (Kandy District, Central Province of Sri Lanka) in November 2018. Ecological features of the habitat were noted. Fruit bodies were photographed *in situ* and delivered to the laboratory at the National Institute of Fundamental Institute (NIFS), Kandy for visual and microscopic examination. Morphological characteristics were examined in fruit bodies of different stages of development and recorded. Measurements of the pileus and the stipe were taken. A spore print was obtained by placing a detached, mature pileus inverted on a black paper, for several hours. Basidiospores were mounted in a drop of lactophenol on a glass slide and examined under microscope (Euromax Stereo Zoom Microscope Model NZ.1903-P with Digital Camera CMEX 5) and photographed, the dimensions of 30 basidiospores were measured. The mean length and width were calculated and given with the range of spore measurements with extreme values in parentheses. Morphological features of the vegetative mycelium and reproductive structures were observed and recorded. The specimen was identified using the morphological descriptions given in Pegler (1986). The specimen was deposited in the fungal collection at the Department of Botany, University of Peradeniya (Accession number UPBTL2019B01).

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## RESULTS AND DISCUSSION

### Morphology description

The pileus of expanded fruit bodies sulphur yellow color in its surface, 4.5 cm diameter, hemispherical to parabolic, with loosely scattered minute, floccose squamules, the margin sulcate (Figure 1). Stipe 7.5 cm x 0.8 cm, cylindrical, hollow, with a prominent swollen base and pad of mycelium at the base (Figure 1). Volva absent. Annulus, attached to the upper third of the stipe, membranous, sulphur yellow color as the stipe (Figure 1) and appears quickly fading. Basidiospores hyaline, thick-walled, ellipsoid, slightly truncated at the apex by small but distinct germ pore (Figure 1), dimensions 5.1 (4.1 – 6.2) x 3.5 (3.2 – 4.0) µm, the spore print white color (Figure 1). Clamp connections were not found. *Leucocoprinus birnbaumii* is growing alone or in clusters in flower pots year-round and lawns etc. in warm conditions (Dutta *et al*. 2011). The fungus breaks down dead organic matter in the potting soil.

### Identification and taxonomy

Features characteristic to *L. birnbaumii* are the hemispherical to parabolic, sulphur yellow color, sulcate striate pileus, covered by floccose squamules of the same color, free lamellae and elongated, yellow stipe with bulbous base (Dutta *et al*. 2011). *Leucocoprinus cepistipes* (Sowerby) Pat., another closer species, recorded in Sri Lanka (Pegler, 1986) is different from *L. birnbaumii* in its white color pileus with pale brown disc, white to cream color lamellae and the same color stipe. Annulus is membranous, yellowish as the stipe and attached to upper third of the stipe.

The fungus belongs to the Kingdom Fungi, Phylum Basidiomycota, Order Agaricales, Family Agaricaceae, Genus *Leucocoprinus* and *Leucocoprinus birnbaumii*

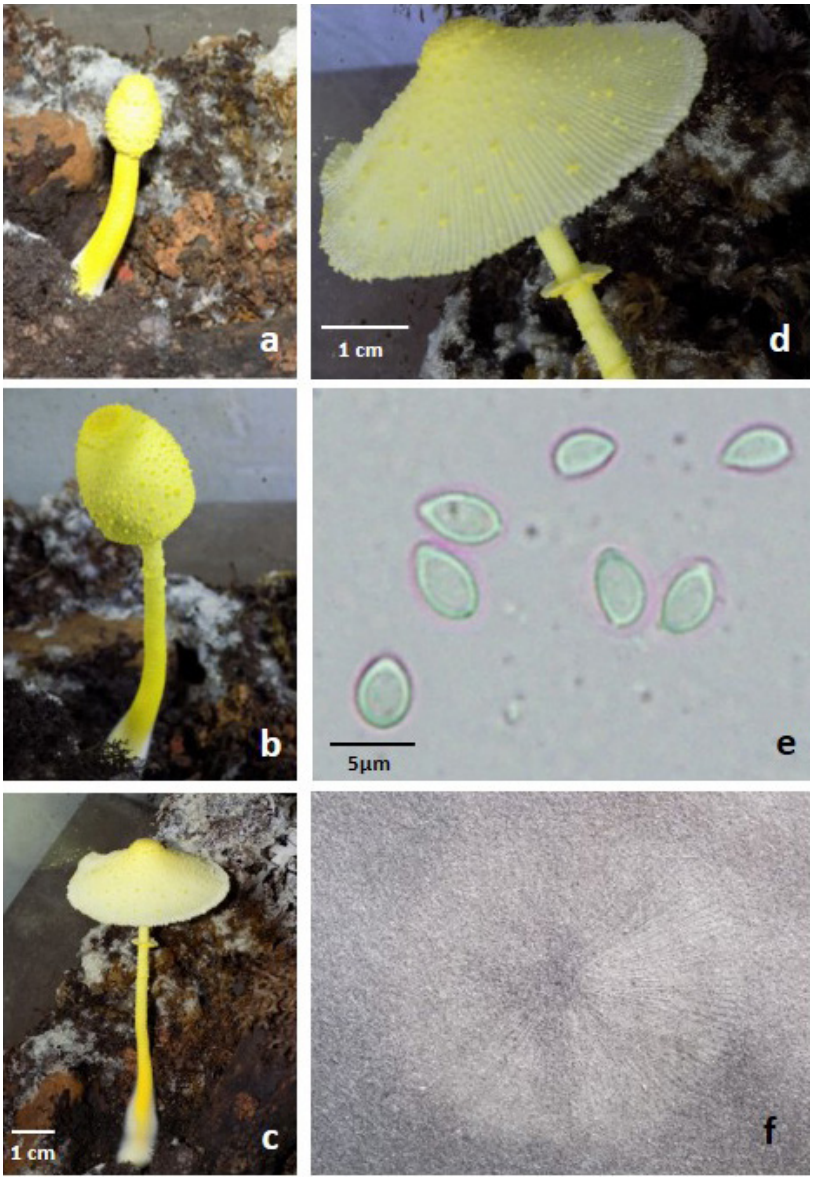


**Figure 1:** Fruit bodies of *Leucocoprinus birnbaumii* that appeared on decaying mosses indoors at different stages of development, a - b-younger and c - mature stages of the expanded mushroom, d sulphur yellow, convex, pileus with loosely-scattered minute, floccose squamules and sulcate margin; the membranous annulus attached to the upper third of the stipe, the color is same as the stipe, e- basidiospores, and f- white color spore print.

(Corda) Singer.

Synonyms of *L. birnbaumii* include *Agaricus luteus* Bolton (Bolton, 1788), *A. birnbaumii* Corda (Corda, 1839), A. flos-sulphuris Schnizl. (Sturm, 1851), *Bolbitius birnbaumii* (Corda) Sacc. & Traverso (Saccardo and Traverso, 1910), *Lepiota aurea* Massee (Messee, 1912), *L. lutea*, *L. copronoides, L. pseudolicmophora* Rea. (Rea, 1922), *Leucocoprinus luteus*, (Locquin, 1945) and *L. flos-sulphuris* (Schnizlein) Cejp.

Petch (1910) referred this fungus to be common and often found in the Peradeniya area with large numbers of young, stages springing up close to the bases of expanded mushrooms. However, there had been no records of the species over a period of more than a century in the country. This may indicates the overall scarcity of taxonomical studies on macrofungi over the past decades in Sri Lanka.

## ACKNOWLEDGEMENTS

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## DECLARATION OF CONFLICT OF INTEREST

Authors declare no conflict of interest.

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