

THE TAXONOMY OF *CORTICIUM* *SALMONICOLOR*

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Intisari

Dalam kajian yang telah dilakukan, didapatkan adanya lima tahap kehidupan jamur merah jambu yaitu: 1. tahap jaring laba-laba, 2. tahap pseudonoduler, 3. tahap teleomorf, 4. tahap nodular, dan 5. tahap anamorf.

Kajian perbandingan morfologi dan anatomi antara masing-masing tahap, dan juga daur hidup jamur dengan *Corticium* dan genera lain yaitu resupinat *Basidiomycetes* menunjukkan bahwa jamur ini harus digolongkan menjadi genus baru yaitu *Upasia*. Selanjutnya jamur ini disebut sebagai *Upasia salmonicolor*.

Abstract

In the recent study, it was found five stages of the pink fungus, those are: **I. cobweb stage, II. pseudonodular stage, III. teleomorph stage, IV. nodular stage, and V anamorph stage.** Comparative study of morphology and anatomy of those stages, as well as life cycle of the fungus with *Corticium* and other genera of resupinate Basidiomycetes showed that this fungus must be accommodated in a new genus. *Upasia*. Then the fungus should be known as *Upasia salmonicolor*.

1. Introduction

In the majority of phytopathological literatures, the causal agent of the tropical pink disease has been classified as *Corticium salmonicolor* Berk. & Br. More recently, however, some authors have classified this fungus as *Pellicularia salmonicolor* (Berk. & Br.) Dast., *Botrybasidium salmonicolor* (Berk. & Br.) Venk., or *Phanerochaete salmonicolor* (Berk. & Br.) Julich (Mundkur, 1959; Semangun, 1971). In a recent study (Harsojo-Tjokrosoedarmo, 1984) on the biology of this species, it was shown that the morphology, anatomy, development and function of the fungus stages on the pathogenicity as well as the complicated life cycle of the fungus are so different from its supposedly closely related species. Consequently the pink fungus cannot be accommodated in the existing genera of resupinate Basidiomycetes, and hence a new genus is proposed for this species.

Upasia Harsojo-Tjokrosoedarmo & Rifai, gen. nov.

Carposoma effusum, resupinatum, membranaceum. Hymenium laeve, salmonicoloris, vel in sicco cremeum. Systema hypharum monomiticum. Hyphae hyalinae, non fibulatae, plurinucleatae. Cystidiae vel gloeocystidiae nullae. Basidia tetraspora, longa, plus minusve cylindracea vel saepae clavatae. Sporae hyalinae, inamyloideae. Typus: *Corticium salmonicolor* Berk. & Br.

Basidiocarp effused, resupinate, membranous, occurs as pink incrustation. Hymenium smooth, pink salmon in colour or cremeus when dry. Hyphal system monomitic. Hyphae hyaline, multicuculate, without clamp-connection. Cystidiae or gloeocystidiae absent. Basidia tetraspores, subclavate to cylindric. Spore hyaline, inamyloid. Type: *Corticium salmonicolor* Berk. & Br.

This species exhibits five developmental stages on the surface of the host bark: I. *Cobweb stage*; II. *Pseudonodular stage*; III. *Teleomorph* (basidiocarp, or basidioma, *Corticium* stage); IV. *Nodular stage*; V. *Anamorph* (*Necator* stage = Aseksual stage).

The generic name *Upasia* is derived from the local name of the fungus "jamur upas", meaning noxious fungus.

Upasia salmonicolor (Berk. & Br.) Harsojo-Tjokrosoedarmo, comb. nov.

Corticium salmonicolor Berk. & Br., J. Linn.

Soc. 14: 7, 1873, basionym. -- *Pellicularia salmonicolor* (Berk. & Br.) Dast., Curr. Sci. 15: 193, 1946 -- *Botryobasidium salmonicolor* (Berk. & Br.) Venk., Indian Phytopath. 3: 82, 1950. -- *Phanerochaete salmonicolor* (Berk. & Br.) Julich, Persoonia 8: 294, 1975.

Corticium javanicum Zimm., Zbl. Bakt. 7: 103, 1901.

Corticium zimmermanni Sacc. & Syd., Syll. Fung. 16: 1117, 1902 (Cunningham, 1963).

Teleomorph (*Basidiocarp*, *basidioma*) (III)

The basidiocarp occurs as pink incrustation or pink pustules, resupinate over the bark or substrate, generally situated on the lower or shady side of a branch or encircling a shaded stem. Hyphal system monomitic, without clamp-connection, composed of four layers: a) **basal layer**, as thin and loose hyphal layer, creeps over the bark or substrate, originating from cobweb stage mycelia, composed of 2-3 well-spaced layers of hyphae, branching horizontally and vertically; b) **intermediate layer**, composed of loosely arranged perpendicular branches arising from the basal layer, each giving rise

to dichotomous or irregular branches, $5-24 \times 3-6 \mu\text{m}$; 3) **subhymenial layer** (*subhymenium*), composed of moniliform chains of short sterile cells, arising as branches of intermediate layer, compactly arranged, divergent below, but with their apices always perpendicular to the basal layer; 4) **hymenial layer** (*hymenium*) composed of holobasidia without cystidia or gloeocystidia; the **holobasidia** are hyaline, subsclavate to cylindrical, thin-walled, $12-24 \times 4, 5-9 \mu\text{m}$, and bear 2-4 hyaline sterigmata; the **sterigmata** are slender and conical, straight or slightly curved inward, $4,5-9 \mu\text{m}$ long; the **basidiospores** are hyaline, globose to ovoid, thin-walled, smooth, inamyloid, $6-7,5 \times 4,6-6 \mu\text{m}$. The basidiospores are formed more abundantly at night at about 24h00 to 05h00, with the maximum basidiospore formation being recorded from midnight to 05h00. Following germination in appropriate situations the basidiospores give rise to the cobweb stage.

The other four stages are:

A. Cobweb stage (I)

The cobweb stage is a thin, white, cobweb or netlike hyphal layer which creeps over the host surface, sometimes with parallel terminal hyphae, consisting of 2-3 layers of $3-14 \mu\text{m}$ diam. hyphae; hyphae hyaline, anastomose freely, the hyphae cells contain one, two, three, or four nuclei. At maturity this stage will develop into teleomorph as pink incrustation by producing perpendicular branches.

The cobweb stage represents the weakest but the most important form for the fungus and disease development, since it may form the other four stages. The entrance of the pink fungus into the host tissue occurs in the cobweb stage through cracked epidermis or lenticells. The cobweb stage is developed following the germination of basidiospores or conidia.

B. Pseudonodular stage (II)

The pseudonodular stage is manifested by conical or hemispherical white pustules, $0,2-0,5 \text{ mm}$ diam., occurring only on lenticells or cracked epidermis, on the lower or shady side of a branch, and never occurs on an intact surface. At maturity the colour becomes pink after developing into teleomorph stage as pink pustules; its tissue consists of irregular rounded cells, of $8-20 \times 6-15 \mu\text{m}$ in size, the surface cells of which are slightly flattened and at maturity will act as basal layer of the teleomorph pustules. The pseudonodular stage is an adventitious stage, and is formed by the cobweb stage through symphogenous aggregation of its mycelia.

C. Nodular stage (IV)

The nodular stage is manifested by globose white pustules relatively bigger than pseudonodular pustule, 0.5–1.5 mm diam., situated on the exposed surface or the upper side of a stem or branch, occurring chiefly on the intact surface of the bark, but my also on lenticells or cracked epidermis; the tissue of this stage is composed of a compact flattened cells; young pustules are white in colour, covered by a mantle of interwooven hyphae. At maturity the mantle breaks open and the colour changes to orange after developing into the anamorph stage. The nodular stage is formed by the cobweb stage through compound meristogenous aggregation of its mycelia.

D. Anamorph (V)

The necator stage or the anamorph is manifested by small orange red sporodochia of 0.5–1.5 mm diam., situated on the exposed surface or upper side of a branch or stem, occurring chiefly on the intact surface of the bark, but my also on lenticells or cracked epidermis; the sporodochia consist of stroma, conidiogenous cells, and basipetally holothallic conidial chains; conidia hyaline when viewed singly, but appear orange red in mass, of various shapes, ovate, rectangular, or irregular, relatively thick-walled, $11.4-20.7 \times 12.20 \mu\text{m}$. The anamorph which represents an asexual form of the fungus, is chiefly developed from nodular stage, but my also be formed by cobweb stage mycelia directly, by forming one-cell-layer stroma acting as conidiogenous cells. Upon germination the conidia will form also the cobweb stage.

Culture: the colony of pink fungus isolated on PDA at first white and changes to pink after more than five days old; the hyphae are hyaline, thin-walled, anastomose easily with each other, posses perpendicular branches, provided with dolipore septa, and their cells are uninucleate, binucleate, trinucleate, and tetranucleate, $2-9 \mu\text{m}$ in diameter.

Habitat: Paracitic on stems, branches, and twigs oi 144 species of woody plants (Rant, 1912; Harsojo-Tjokrosoedarmo, 1984).

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