

Taxonomic Studies of Indian Myxomycetes. XX. The Corticolous Myxomycetes. 1

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Abstract. — In this communication, first in the series on corticolous myxomycetes of India, are described, illustrated and discussed four rare myxomycetes, hitherto unreported from India. These are: *Licea parasitica* (ZUKAL) MARTIN, *Echinostelium colliculosum* WHITNEY & KELLER, *E. minutum* de BARY and *Hemitrichia abietina* (WIGAND) G. LISTER. *E. colliculosum* is the second report after its discovery.

Introduction

A great spurt in the taxonomy of Indian myxomycetes has been witnessed during the last 25 years or so. The majority of the myxomycetes described during this period have been collected from different substrates in nature. However, the bark of living trees has been reported to be quite favourable for inconspicuous myxomycetes which normally evade the detection of a collector in the field (MARTIN & ALEXOPOULOS, 1969, BROOKS, 1968; KELLER & BROOKS, 1973, 1976; HARKONEN, 1977; LAKHANPAL & MUKERJI, 1981). Such myxomycetes can be isolated easily by keeping bark pieces in moist chambers (GILBERT & MARTIN, 1933). The myxomycetes that grow and fruit on the bark have been called corticolous myxomycetes.

A survey of literature on Indian slime moulds reveals that only about 19 species have been isolated from the bark of living trees so far. Interestingly most of these are either new records or are new species altogether. These reports suggest that there is great need for systematic exploration of corticolous myxomycetes in this country. The present investigations have, therefore, been taken up to study the myxomycetes in the bark of living trees in Himachal Pradesh.

In the present investigations, the bark from three randomly selected *Pinus wallichiana* A. B. JACKSON trees was collected and placed in moist chambers following GILBERT & MARTIN (loc. cit.). The bark was sampled thrice and ecological data recorded, which would be published separately.

Four of the species isolated in these moist chambers have been found to be new records for India. Two appear to be new species and need authentication before publication.

All specimens have been deposited in the Herbarium of Department of Bio-Sciences, H. P. University, Simla. RKC/TNL number refers to the abbreviated names of the authors.

Descriptions

Licea parasitica (ZUKAL) MARTIN, Mycologia 34: 702 (1942). — Fig. 1—4.

Fructifications sporangiate, sessile, up to 300 μm in diameter. Sporangia scattered, globose or subglobose, sometimes on a somewhat restricted base; peridium single, thin and membranous on drying, gelatinous when moist, brownish black or almost black when wet, less dark when dry, shining against light, shrivelled on drying, marked by minute papillae on the inner surface, basal portion thicker and filled with debris, dehiscence by means of a well defined lid; whose margin is thinner and more fitting on the sporangium like a hat, blown off on drying; spore-mass blackish brown; spores light brown by transmitted light, smooth, spore wall uniform in thickness all around, 15—17(—20) μm in diameter. Protoplasmodium medium yellow brown.

Habitat: Isolated from the bark of *Pinus wallichiana* A. B. JACKSON; December 1979 to April 1980.

Collections examined: RKC/TNL 1104, 1105, 1122, 1133, 1134, 1135, 1136, 1137, 1141, 1143, 1145.

Discussion: These populations resemble *Licea parasitica* (ZUKAL) MARTIN, in the mechanism of dehiscence, sporangial shape and size and characteristics of peridium. The spore size in the type species has been reported to be 11—13(—16) μm whereas it ranges from 15—17(—20) μm in our specimens. MARTIN & ALEXOPOULOS (1969) mention in their notes on this species that larger spore measurements reported in the literature may either be due to incomplete maturation of spores in the specimens examined or to confusion with other species.

We have repeatedly isolated the species from moist chambers and have found the spore size to be constant. However, except for the spore size, the specimens resemble *L. parasitica* almost in all characters. Because of this, we have preferred to retain it in this species.

Echinostelium colliculosum WHITNEY & KELLER, Mycologia 72: 641 (1980). — Fig. 5—7.

Fructifications sporangiate, stipitate, up to 250—350 μm in total height. Sporangia gregarious, globose, 30—50 μm in diameter, pinkish white, one or the other hue predominating at times; peridium early fugaceous; columella globose, (7)9—12(15) μm , usually the

spores fall apart and the spore-like columella is mistaken for the sporangium proper, more appropriately the columella appears to be a single spored-sporangium, with a slightly thickened distinct base, which in actuality is the remanant of evanescent peridium; capillitium absent; spore-mass whitish or pinkish, colourless by transmitted light; spores globose, 8–10 μm , smooth or somewhat roughened, bearing circular thickenings at point of spore to spore contact.

Stipe expanded below and tapering upwards, basal $\frac{3}{4}$ portion filled with granular debris, 150–250 μm , in length; hypothallus rotate, membranous.

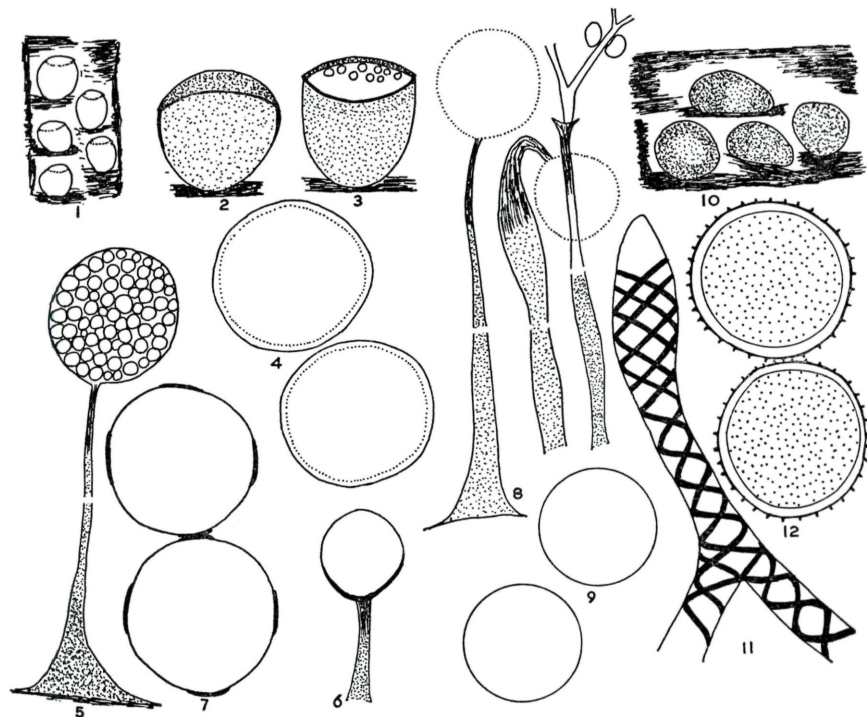


Plate 1: Fig. 1–4. *Licea parasitica*: 1. Globose or subglobose sporangia as they appear under a binocular ($\times 15$). — 2. Single enlarged sporangium showing a clearly demarcated operculum ($\times 50$). — 3. A section of the sporangium showing extended margin of operculum ($\times 45$). — 4. Smooth spores with uniformly thick wall ($\times 1250$)

Fig. 5–7. *Echinostelium colliculosum*: 5. A fructification with intact spore mass ($\times 320$). — 6. A fructification with dispersed spore mass and intact spore-like columella ($\times 1250$). — 7. Spores adherant at point of contact ($\times 2000$)

Fig. 8–9. *Echinostelium minutum*: 8. Fructifications with intact and dehiscent sporangium ($\times 280$). — 9. Smooth spores ($\times 2000$)

Fig. 10–12. *Hemitrichia abietina*: 10. Sessile sporangia ($\times 15$). — 11. A portion of elater ($\times 2000$). — 12. Prominently warted spores ($\times 2000$)

Habitat: Obtained in moist chambers on the bark of *Pinus wallichiana* A. B. JACKSON, and bark of *Cedrus deodara*.

Collections examined: RKC/TNL 1001, 1002, 1312, 1315, 1319.

Discussion: *E. colliculosum* is the only species in the genus *Echinostelium* in which the columella is ball like. The spores remain adherant to each other tenaciously by circular disc-like areas. They, however, do not seem to possess any such connection with the columella as they fall apart easily on maturity. Even when slightly immature the spore-mass separates off the columella in mounts.

When the species first appeared on the bark, clear spore-mass was visible under the binocular but when examined after mounting, instead of the spore-mass a single spore-like structure was left at the stipe apex. It was realised after losing a number of sporangia that this structure is the columella; the spore mass persists only when sporangia are mounted before they dry completely. The spore-mass usually remains in a hollow sphere but when pressure is applied, they mostly come to be in pairs and remain as such for quite sometime.

Our specimens resemble the type species in most of the characteristics. However, the fructification and columella are slightly larger, and the spores are slightly smaller.

Echinostelium minutum de BARY in Rost. Mon. 215 (1874). — Fig. 8, 9.

Fructifications sporangiate, stipitate upto 0.4 mm. Sporangia scattered to gregarious, solitary, erect, globose, 40–50 μm in diameter, pale pinkish or white; peridium fugaceous, leaving a persistent collar at the base, about 7.5–10 μm ; columella very short, not exceeding 10 μm in height; capillitium scanty, several times forked, concolourous with columella; spores pale by transmitted light, nearly smooth 7.5–8(9) μm in diameter.

Stipe hair-like, white, subulate, expanded below, about 8 μm , filled with granular material, darker towards the base and lighter above; hypothallus rotate membranous, yellow transparent.

Habitat: On the bark of *Pinus wallichiana* A. B. JACKSON in moist chambers. From December, 1979 to April, 1980.

Collections examined: RKC/TNL 1011, 1030, 1070, 1071, 1080, 1090, 1096, 1099, 1101, 1131, 1144, 1172, 1204, 1221, 1232, 1238, 1240, 1301.

Discussion: The above populations resemble *Echinostelium minutum* de BARY in all characters as described in MARTIN & ALEXOPOULOS (1969). The capillitium, though forked several times, is without hooked free ends.

Except collection No. 172, the stipe is hair like, white, subulate, expanded below and filled with granular material. In this collection,

the stipe is much swollen and thus suddenly tapers into a hair-like filament.

Hemitrichia abietina (WIGAND) G. LISTER, Mycet. ed. 2. 227 (1911). — Fig. 10—12.

Fructifications sporangiate, sessile, up to 0.7 mm. Sporangia globose subglobose or turbinate, scattered to gregarious, yellowish brown, iridescent; peridium single, thin, membranous, shining, golden yellow, iridescent; dehiscence irregular above, the basal portion remaining as a persistent cup; capillitium an open network of sparingly branched and anastomosing yellow threads, 3—4 μ m in diameter, bearing 2—4 spirals, without spines, with a few inflated or rounded free ends; spore-mass yellow, pale yellow in transmitted light, globose to slightly subglobose, 9—10 μ m in diameter, coarsely warted; hypothallus dark and iridescent.

Habitat: On the bark of *Pinus wallichiana* A. B. JACKSON in moist chambers. December, 1979 to April, 1980.

Collections examined: RKC/TNL 1041, 1145, 1190, 1194, 1231, 1235, 1291, 1302, 1303.

Discussion: These populations resemble *Hemitrichia abietina* (WIGAND) G. LISTER in most of the characters, but they differ in lacking a stalk and in possessing non-reticulate and slightly smaller spores.

Literature

- BROOKS, T. E. (1967). A study of corticolous myxomycetes. — Ph. D. Dissertation, Univ. of Kansas, Lawrence, 224 p.
- HARKONEN, M. (1977). On corticolous myxomycetes in Southern Finland and Norway. — Ann. Bot. Fennici 17: 19—32.
- (1978). On corticolous myxomycetes in Southern Finland and Norway. — Ann. Bot. Fennici 15: 32—37.
- KELLER, H. W. & T. E. BROOKS (1973). Corticolous myxomycetes-I. Two new species of *Didymium*. — Mycologia 65: 286—294.
- LAKHANPAL, T. N. & K. G. MUKERJI (1981). Taxonomy of Indian myxomycetes. — J. Cramer, Germany (pp. 530).
- MARTIN, G. W. & C. J. ALEXOPOULOS (1969). The Myxomycetes. — Univ. Iowa Press, Iowa City. 561 p.
- WHITNEY, K. D. & H. W. KELLER (1980). A new species of *Echinostelium*. — Mycologia 72: 641.

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