verlag Ferdinand Berger & Söhne Ges.m.b.H., Horn, Austria, download unter www.biologiezentrum.

# Some species of Laccaria from India

Else C. Vellinga

Rijksherbarium, Schelpenkade 6, 2313 ZT Leiden, Netherlands

Summary. – Four species and two varieties of the genus Laccaria (viz. L. amethystea (BULL) MURRILL, L. laccata var. pallidifolia (PECK) PECK, L. laccata var. pruinosipes VELLINGA, L. olivaceogrisea VELLINGA, and L. pumila FAY.) are recorded from north-western states of India. Laccaria olivaceogrisea and L. laccata var. pruinosipes are described as new.

### Introduction

On a collecting trip in the federal states Uttar Pradesh, Himachal Pradesh and Punjab in north-west India, during August and September 1964, Dr. C. Bas collected, among representatives of other genera, 4 species of Laccaria, in all 10 collections. Up to this time little is known about the occurrence of Laccaria-species in the Indian subcontinent as a whole. Laccaria laccata (Scop.: Fr.) B. & Br. has been recorded from Tamilnadu (NATARAJAN, 1977) and from Uttar Pradesh and Sikkim (BUTLER & BISBY, 1931). But WATLING & GREGORY (1980) mention no Laccaria-species from Kashmir in their list of 119 species of Agarics collected there. BERKELEY & BROOME (1871) give a list of 6 taxa occurring on Sri Lanka, but according to MUELLER (1982) the species L. sublaccata (B. & BR.) COOKE and L. porphyrodes (B. & Br.) COOKE do not belong to the genus Laccaria on account of their smooth spores. Furthermore, it is doubtful if L. spodophora (B. & Br.) COOKE is a Laccaria, and as BERKELEY & BROOME mention the spores of Agaricus vinosofuscus B. & BR. as resembling those of A. porphyrodes, it is also doubtful whether this taxon belongs to Laccaria or not. Consequently, L. laccata and L. amethystea (Bull.) MURRIL are the only species of Laccaria thus far known from the mountainous areas of Sri Lanka.

#### **Annotated list of species**

#### 1. Laccaria olivaceogrisea Vellinga, sp. nov. – Fig. 1.2

Pileus 9–32 mm, plano-convexus, depressus in centro, hygrophanus, udo subolivaceo-fuligineus, amethysteo-fuligineus, cum margine striato, sicco subolivaceofulvus, ochraceo-brunneus in centro, subtomentosus interdumque subfloccoso-tomentosus in centro. Lamellae distantiae, crassae, subemarginato-adnatae, subolivaceo-griseae demum subviolaceo-griseae, intervenosae, albo-farinosae in maturitate; acies concolor integer. Stipes 23–46 × 2.5–6 mm, fistulosus, fibrilloso-subcos-



Fig. 1.1: Laccaria laccata var. pruinosipes. – Habit (× 1); spores (× 1500), cheilocystidia (× 1000) and hairs of stipe (× 500) (all figs. from holotype). –
1.2: Laccaria olivaceogrisea. – Habit (× 1), spores (× 1500) (all figs. from holotype).

tatus, subolivaceo-fuligineus atque porphyro-griseus; tomentum basale album. Caro in pileo corticeque stipitis pallide grisea, in stipite pallide roseo-grisea. Odor mitis aromaticus, acidulus fracto. Sporae in cumulo albae,  $(7.5-)8-9 \ \mu m$ , globosae, cum spinis 1–2.5  $\mu m$  longis. Basidia cum 4 sterigmatis. Cystidia absentia. Fibulae presentes. Habitat ad terram in silva Cedrorum deodara. India. Bas 4233 (Holotypus, L).

Pileus 9–32 mm, plano-convex with depressed centre, hygrophanous, when moist slightly olivaceous grey, in places amethyst grey, translucently striate at margin, on drying pallescent to slightly olivaceous beige, with dingy ochraceous brownish tinge at centre, minutely tomentose, sometimes very slightly floccose-tomentose near centre. – Lamellae distant, (L 12–20, 1 0–3) thick slightly emarginately adnate, strongly intervenose, grey with faint olivaceous tinge to grey with faint violaceous tinge, white powdery with

15 Sydowia, Vol. XXXIX, 1986

225

age, with concolorous even edge. – Stipe 23–45  $\times$  2.5–6 mm, somewhat tapering towards apex, fistulose, strongly fibrillose to subcostate, dark grey with very faint olivaceous tinge, pale porphyr-grey between fibrillose ribs, with thin white tomentum at base. – Context in pileus and cortex of stipe pale grey, dark grey over lamellae, in rest of stipe distinctly flesh pinkish grey. – Smell weakly sweet aromatic,  $\pm$  chocolate-like, but acidulous when context crushed. – Taste not known.

Spore print white. Spores (20,2)  $7.5-9 \times (7.5-)8-9(-9.5) \mu m$ , Q = 0.9-1.05,  $\bar{Q} = 1.0$ , globose, with up to 2.5  $\mu m$  high prominent spines, diminishing in height towards prominent truncate up to 2  $\mu m$  high hilar appendage, thick-walled. – Basidia  $39-47 \times 10-11 \mu m$ , narrowly clavate, 4-spored. – Cystidia absent. – Hyphae of hymenophoral trama  $5-10 \mu m$  wide, pale greenish brown in NH<sub>4</sub>OH. – Pileipellis a cutis with some ascending hyphae, made up of  $3-6 \mu m$  wide hyphae with in NH<sub>4</sub>OH yellowish greenish brown pigment. – Stipitipellis a cutis without hairs or cystidia. – Clamp connections present.

Habitat. – Terrestrial in forest of Cedrus deodara;  $\pm$  2200 m. alt.

Collection examined. – INDIA: Punjab, Kulu-valley, Manali, 24 Aug. 1964, BAS 4233 (holotype, L).

This species resembles the grey and dark grey Japanese species *Laccaria murina* Hongo and *L. nigra* Hongo, but in these species olivaceous and violaceous tinges are lacking; besides, *L. nigra* has two-spored basidia (MUELLER, 1982). *Laccaria violaceonigra* G. STEVENSON, from New Zealand, has a fuscous black pileus in combination with a purple to vinaceous brown stipe; also in this species olivaceous tinges are lacking; microscopically, *L. olivaceogrisea* and *L. violaceonigra* resemble each other, especially in shape and size of the spores.

It is striking that the variation in colour of *Laccaria*-taxa is bigger in Asia (India, Japan) and New Zealand than in Europe, North and South America, where only brown and violaceous tinges occur in the representatives of the genus.

In Cortinarius subgen. Dermocybe, the highest regional heterogenity of pigments is found in New Zealand (HøILAND, 1983), an indication for the place where to suspect the cradle of this group. It is tempting to speculate about the place of origin of the genus Laccaria too, but it is not likely that Laccaria originated also in Gondwanaland, like Dermocybe, as the present day occurrence of the greyish coloured species in Japan and North India, the southern and eastern borders of the formerly called continent Laurasia does not support this theory. But of course, more data concerning the species in Australia, and the chemical structure of the pigments and the way in which they are formed are needed. However, it seems likely that in the European and American temperate regions some brown tinged species and variants have evolved, in connection with different tree-species. Some taxa, *L. proxima* for instance, now growing in New Zealand, seem to have been introduced as they are found exclusively with exotic tree-species (McNABB, 1972).

# 2. Laccaria laccata var. pruinosipes Vellinga, var. nov. - Fig. 1.1

Differt a typo in stipite omnino longitudine pruinoso et in sporis globosis. India. Bas 4403 (Holotypus, L).

Pileus 7–23 mm, convex to applanate, with applanate to slightly depressed centre, and margin becoming wavy with age, rather dark flesh-coloured brown, traslucently striate up to 3/3 of radius, later becoming subsulcate, glabrous. - Lamellae rather distant, (L 12-16, 1-3) rather thick, adnate, uncinate, emarginate or adnexed, flesh pink to flesh coloured red with entire somewhat whitish pruinose edge. – Stipe up to  $55 \times 2.5$  mm, cylindrical or slightly broadened towards base, fistulose, very pale ochraceous cream, sometimes slightly pinkish at apex, minutely pruinose all over. - Context in pileus pinkish buff, in stipe concolorous with surface. - Smell acidulously spicy when crushed. - Taste slightly unpleasant. - Spore print white. - Spores  $(20.2)(7.5-)8-9(-10.5) \times (7.5-)8-10(-11) \ \mu m, \ Q = 0.9-1, \ \bar{Q} =$ 0.95, globose, with up to  $2 \mu m$  high spines, with up to  $1 \mu m$  high abrupt truncate hilar appendage, thick-walled. - Basidia 4spored. – Cheilocystidia cylindrical,  $22-32 \times 6-9 \mu m$ , colourless. - Pileipellis a cutis of adnate hyphae. - Stipitipellis a cutis with patent cylindrical parts of hyphae, up to  $50 \times 5-10 \mu m$ , colourless. - Clamp connections present.

Habitat. – Terrestrial in forest of Quercus incana;  $\pm$  2300 m. alt.

Collection examined. – INDIA: Uttar Pradesh, Mussooree, Oak-Villa, 16 Sept. 1964, Bas 4403 (holotype, L).

This variety is striking on account of the stipe being completely covered with short hairs. In some other species, viz. Laccaria proxima, L. bicolor, and L. amethystea, this kind of covering appears at the apex of the stipe only. In the other varieties of L. laccata, viz. var. laccata, var. pallidifolia, and var. moelleri, the apex of the stipe is very rarely covered with hairs.

# 3. Laccaria laccata var. pallidifolia (PECK) PECK

A comprehensive description of this taxon is given by MUELLER & VELLINGA (1986).

15\*

Habitat. – Terrestrial in plantations of coniferous trees, in deciduous forests and in mixed forests; 600–2750 m. alt.

Collections examined. – INDIA: Himachal Pradesh, Narkanda, 11 Aug. 1964, Bas 4134 & 4135; Uttar Pradesh, Rajspur, North of Dehra Dun, 4 Sept. 1964, Bas 4282; Uttar Pradesh, Dehra Dun, New Forest, 5 Sept. 1964, Bas 4289; Uttar Pradesh, Mussooree, 18 Sept. 1964, Bas 4427 (all in L).

# 4. Laccaria amethystea (Bull.) MURRILL

The Indian collections studied are not aberrant from the European collections. For a description of the microsopical characters of this taxon see MUELLER & VELLINGA (1986).

Habitat. – Terrestrial in rocky pastures with scattered coniferous trees or in mixed forest of *Quercus incana*, *Rhododendron* arboreum, and *Cedrus deodara*;  $\pm$  1900–2100 m. alt.

Collections examined. – INDIA: Punjab, Kulu-valley, Manali, 23 Aug. 1964, Bas 4213; Uttar Pradesh, Mussooree, 21 Sept. 1964, Bas 4456 (both in L).

### 5. Laccaria pumila FAY.

A description of this taxon with montane to alpine distribution is given by TRIMBACH (1978). The characters of the Indian collection studied fit this description very well.

Habitat. – Terrestrial in herbaceous vegetation;  $\pm$  2800 m. alt.

Collection examined. – INDIA: Punjab, Kulu-valley, Kothi, 22 Aug. 1964, Bas 4212 (L).

Notes on the correct name of this taxon have been published by MUELLER & VELLINGA (1986).

#### Acknowledgements

Thanks are due to Dr. C. BAS, who kindly placed his collections and field-notes at my disposal, and to TH. KUYPER for critically reading the manuscript.

# References

BERKELEY, M. J. & BROOME, C. E. (1871). On the fungi of Ceylon. – J. linn. Soc., Bot. 11: 494–567.

BUTLER, E. J. & BISBY, G. R. (1931). The fungi of India. – Imp. Coun. Agr. Res. India, Sci. Mono 1, ser. XVIII: 1–237.

HØILAND, K. (1983). Cortinarius subgenus Dermocybe. – Opera botanica 71: 5–113.

MCNABB, R. F. R. (1972). The Tricholomataceae of New Zealand. 1. Laccaria BERK. & BR. - N. Z. J. Bot. 10: 461–484. MUELLER, G. M. (1982). The genus Laccaria in North America excluding Mexico. – Ph. D. Thesis Knoxville.

& VELLINGA, E. C. (1986). Taxonomic and nomenclatural notes on Laccaria B.
& BR.: Laccaria amethystea, Laccaria fraterna, Laccaria laccata, Laccaria pumila, and their synonyms. – Persoonia 13: 27–43.

NATARAJAN, K. (1977). South Indian Agaricales III. - Kavaka 5: 35-39.

TRIMBACH, J. (1978). Materiel pour une "chek-list" des alpes maritimes (suite). – Doc. mycol. 8 (29): 39–53.

WATLING, R. & GREGORY, N. M. (1980). Larger fungi from Kashmir. – Nova Hedwigia 32: 493–564.

# ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: Sydowia

Jahr/Year: 1986/1987

Band/Volume: 39

Autor(en)/Author(s): Vellinga Else C.

Artikel/Article: Ascomycetes of new Zealand. 7. Some bizarre, inoperculate Discomycetes. 224-229