

was observed at 60 min and started declining afterwards. The antagonism existed till 1 h at a dose of 0, 1 mg Kg<sup>-1</sup>. At doses, 1 and 10 mg Kg<sup>-1</sup>, the antagonism was observed till 2 h and 5 h respectively.

#### DISCUSSION

The benzocycloheptene derivative and (+) amphetamine sulphate have been shown to produce dose-dependent stimulation of spontaneous locomotor activity in mice. The intensity of stimulation was almost same between (+) amphetamine sulphate and the compound under investigation over a period of 7 h. The stimulation of locomotor activity by (+) amphetamine sulphate has been attributed to be mediated by brain dopamine<sup>5-7</sup> and noradrenaline<sup>8-10</sup>.

Reserpine-induced cataleptic state is said to be due to the depletion of catecholamines and serotonin in the central nervous system. (+) Amphetamine sulphate antagonises the cataleptic state of reserpine by stimulating the adrenergic<sup>11</sup> and serotonergic receptors<sup>12</sup>. Van Rossum *et al.*<sup>13</sup> has presented evidence for a direct action of (+) amphetamine on adrenergic receptors in brain.

Because of the above considerations, it may be possible that the central stimulant activity of the new compound, a derivative of benzocycloheptene, could involve the mediation of the transmitters, catecholamines and serotonin as in the case of (+) amphetamine sulphate or by a different mechanism. Further experiments are necessary to establish the suggested mechanisms.

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## SOME ADDITIONS TO THE LICHEN FLORA OF INDIA

### I. Genus *Hypotrachyna* (Vain.) Hale (Parmeliaceae)

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**I**N our on-going research project on the lichen flora of Western Ghats (south western India) we have so far determined sixty-nine species belonging to the genera *Bulbothrix*, *Hypogymnia*, *Hypotrachyna*, *Menegazzia*, *Parmelina*, *Parmotrema*, *Parmelia*, *Pseudoparmelia*, *Rehderia* and *Xanthoparmelia* of the family Parmeliaceae. Careful search of the literature revealed that of these sixty-nine species twenty-two taxa were not previously recorded under the composite genus *Parmelia* Ach. (Awasthi, 1965<sup>1</sup>) from Indian subcontinent. Six species of the genus *Hypotrachyna* which constitute additions to the lichen flora of India are detailed in this note. Chemical studies were carried out by thin-layer chromatography (TLC) using EMerck precoated silica gel F<sub>254</sub> aluminium plates and B.D.A. and

H.E.F. solvent systems (Culberson, 1972<sup>2</sup>). Specimens referred to in the text are deposited in the Lichen unit of the Ajrekar Mycological Herbarium (AMH).

The genus *Hypotrachyna* (Vain.) Hale is one of the recently segregated genera from the old composite genus *Parmelia* Ach. (Hale, 1974<sup>3</sup>). It is characterised by non-ciliate thallus and dichotomously branched rhizines.

1. *Hypotrachyna costaricensis* (Nyl.) Hale  
= *Parmelia costaricensis* Nyl.

Thallus corticolous, closely adnate to the substratum, 2–4 cm broad; lobes sublinear to linear, 2–3 mm broad, isidiate, isidia cylindrical, erect,



simple to branched; lower surface black to the margin, rhizinate; rhizines dense, dichotomously branched; apothecia not seen.

Chemistry : Cortex K + yellow, medulla K-, C-, KC-, P-. Atranorine and Fatty acids present.

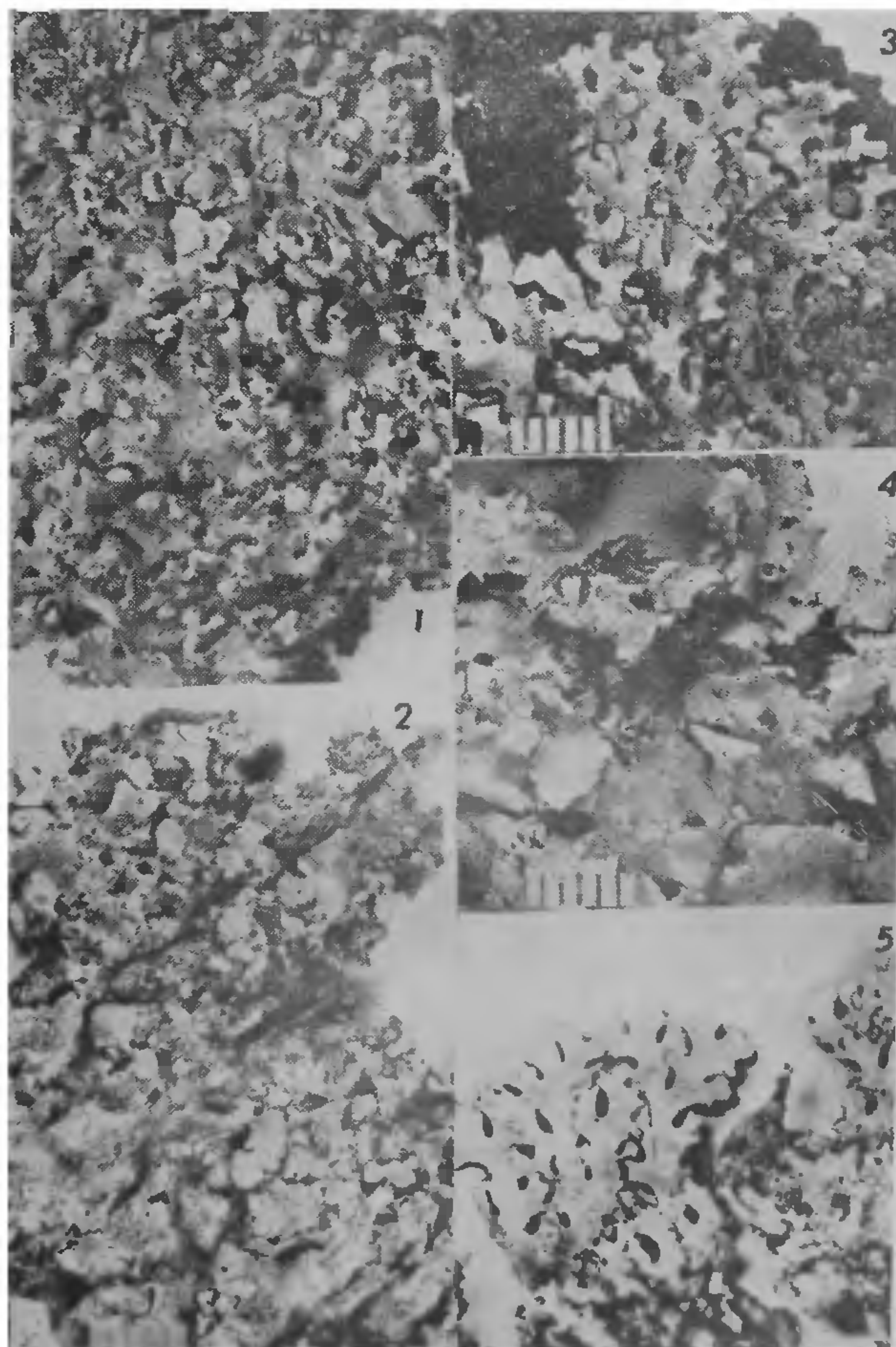
Specimens examined : 75-434 Silver Cascade, Kodaikanal, Tamil Nadu; 76-789 Munnar—Devicolum Road, Kerala.

Geographical Distribution : West Indies, Central America, South America, Philippines, Indonesia, Malaysia.

2. *Hypotrachyna crenata* (Kurokawa) Hale  
= *Parmelia crenata* Kurokawa

Thallus saxicolous, 4-5 cm broad; lobes sub-irregular, 3-4 mm broad, margins crenate, lobes moderately isidiate, isidia short, mostly branched; lower surface black in the centre with faint brown peripheral zone, rhizines sparse; apothecia not seen.

Chemistry : Cortex K + yellow, medulla K + yellow, C-, KC-, P + pale orange. Atranorine, stictic, constictic acid and 2 unknown substances present.



FIGS. 1-5. Fig. 1. *Hypotrachyna rockii* (Zahlbr.) Hale. Fig. 2. *H. orientalis* (Hale) Hale. Fig. 3. *H. microblasta* (Vain.) Hale. Fig. 4. *H. crenata* (Kurokawa) Hale. Fig. 5. *H. immutata* (Kurokawa) Hale—scale in mm.



Specimens examined : 73-2468 Thekadi sanctuary, Kerala; 74-1031 Panhala Fort, Maharashtra; 74-3358 Talacavery, Coorg, Karnataka; 74-3390 Mercara, Coorg, Karnataka; 74-3434 Baghmandala, Coorg, Karnataka; 74-3538 Kottagiri, Tamil Nadu.

Geographical Distribution : Japan.

3. *Hypotrachyna immaculata* (Kurokawa) Hale  
= *Parmelia immaculata* Kurokawa

Thallus corticolous, closely adnate to the substratum, mineral gray, 3-4 cm broad; lobes sublinear to linear, 2-2.5 mm broad; upper surface soorediate, soralia large, mostly subterminal, capitate; lower surface black to the margin, densely rhizinate; apothecia not seen.

Chemistry : Cortex K + yellow, medulla K + reddish, C-, KC + reddish, P-. Atranorine and lividic acid group present.

Specimens examined : 73-1810 Kodaikanal, Tamil Nadu; 73-2062, 73-2181 Kodaikanal—Munnar Road, Kerala; 74-3464 Mudumalalai sanctuary, Tamil Nadu.

Geographical Distribution : South Africa, Java.

4. *Hypotrachyna microblasta* (Vain.) Hale  
= *Parmelia microblasta* Vain.

Thallus saxicolous closely adnate to loosely attached, 5-6 cm broad, yellowish green in colour; lobes sublinear to linear, 1-2 mm broad; upper surface shiny, densely isidiate, isidia cylindrical, simple or coralloid branched; lower surface black to the margin, densely rhizinate; apothecia not seen.

Chemistry : Cortex K-, medulla K + red, P + orange. Usnic acid, norstictic acid, salacinic acid, galbinic acid and atranorine (traces) present.

Specimen examined : 75-46 Silver Cascade, Kodaikanal, Tamil Nadu.

Geographical Distribution : Brazil, Colombia, Hawaii Islands, Jamaica, Mauritius, Java.

5. *Hypotrachyna orientalis* (Hale) Hale  
= *Parmelia orientalis* Hale

Thallus corticolous, closely adnate to the substratum, 2-4 cm broad; lobes sublinear to linear, 1-2 mm broad; upper surface isidiate, isidia cylindrical, simple or branched; lower surface black

with narrow faint brown marginal zone, sparsely rhizinate; apothecia not seen.

Chemistry : Cortex K + yellow, medulla K-, C + orange, P-. Atranorine, barbatric acid and 4-O dimethylbarbatric acid present.

Specimens examined : 73-519, 74-3541 Ootacamund, Tamil Nadu; 75-215 Kodaikanal, Tamil Nadu.

Geographical Distribution : Nepal, Philippines, Malaya.

6. *Hypotrachyna rockii* (Zahlbr.) Hale  
= *Parmelia rockii* Zahlbr.

Thallus corticolous or saxicolous, closely adnate or loose, 4-7 cm broad; mineral gray in colour; lobes sublinear, 1-3 mm broad; upper surface shiny, initially pustulate near the lobe tips, becoming coarsely soorediate; lower surface dark upto the margin, densely rhizinate; apothecia not seen.

Chemistry : Cortex K + yellow, medulla K-, C + rose, P-. Atranorine, evernic and lecanoric acid present.

Specimens examined : 75-49, 75-53 Kodaikanal, Tamil Nadu; 75-253, 75-260 Kodaikanal—Munnar Road, Tamil Nadu.

Geographical Distribution : North, Central and South America, Japan, Indonesia; Hawaii Islands.

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