interwoven hyphae, 2.8–8.4 μm in width. Pileus surface, an undifferentiated cutis; pileocystidia rarely observed, thin-walled, 30.8–36.4 × 7–11.2 μm, clavate. Stipe of interwoven hyphae, thin-walled, 4.2–7 μm in width. All hyphae with clamp connections.

On dead wood of an unidentified tree, solitary, SRM Cardamom Estate, Senkaltheri, Tirunelveli, Tamilnadu, 13th February, 1979. Coll. K. Natarajan, Herb. MUBL. No. 2553. (figure 1).

In the same wood in which the basidiocarp of this fungus was growing, surrounding the stipe of the basidiocarp, large number of synnemata of *A. broussonetiae* were also found. A pure culture of the teleomorph was not obtained. A pure culture of the anamorph did not produce the teleomorph. *A. broussonetiae* was also shown to be the anamorph of *Pleurotus corticatus*[6], *P. ostreatus*[7] and *P. gemmellarii*[8]. According to Kendrick and Watling[9] the report of Ghosh *et al*[7] that *A. broussonetiae* being the anamorph of *P. ostreatus* is an error.

We studied the Taiwan material of *P. cystidiosus* described by Peng[3] and found that our collection slightly differs from it in having a very well-developed subhymenium.

Our thanks are due to Prof. C. V. Subramanian for his encouragement. We also thank Dr J. T. Peng, Taiwan Agricultural Research Institute for the specimen of *P. cystidiosus*.

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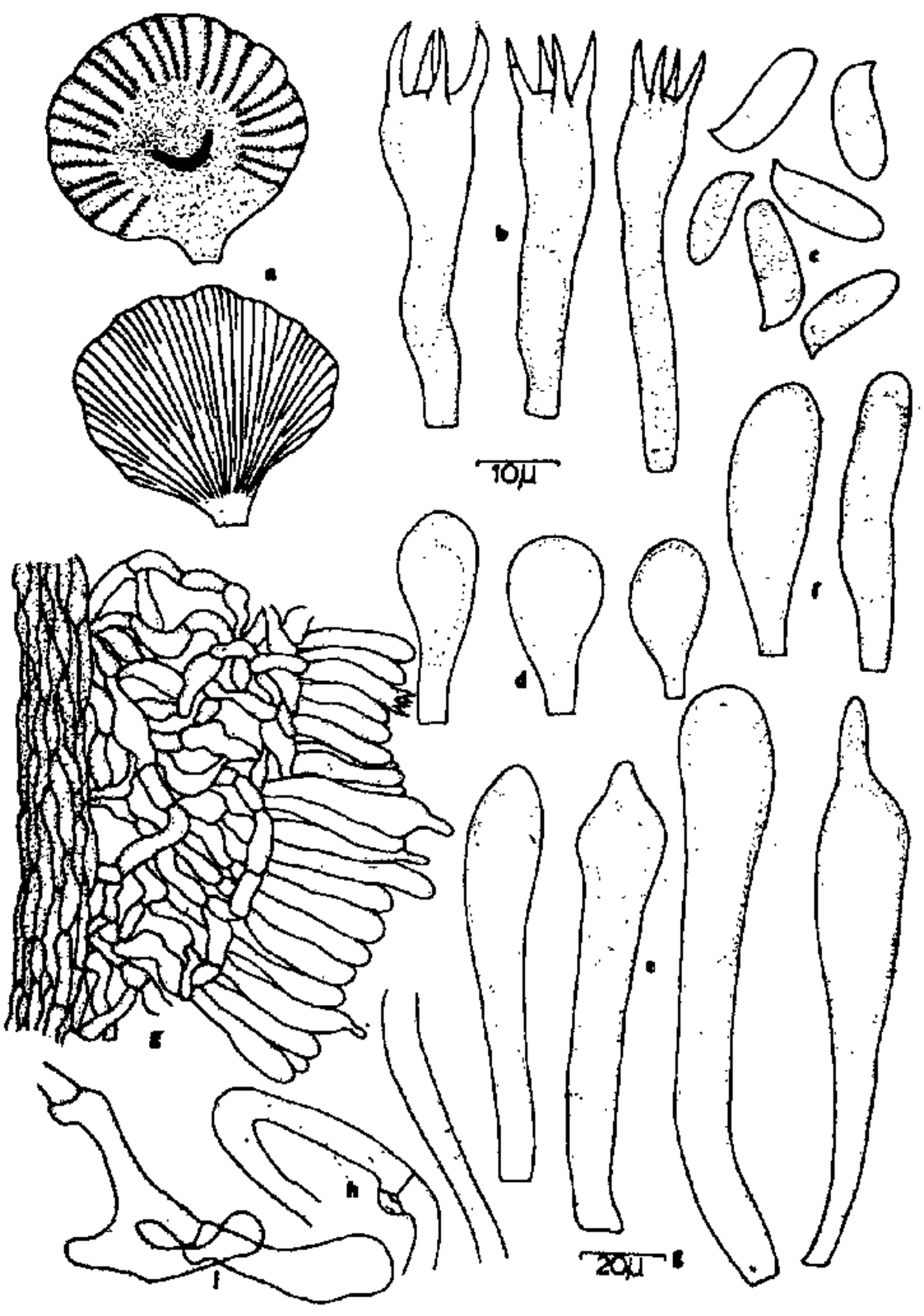

Figure 1. **a** Habit, **b** Basidia, **c** Basidiospores, **d** Cheilocystidia, **e** Pleurocystidia, **f** Pileocystidia, **g** T.S. of gill showing the gill trama and well developed subhymenium, **h** tramal hyphae, **i** hypha of subhymenium.

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ACTIVITY OF THIOLUTIN AGAINST CERTAIN SOIL BORNE PLANT PATHOGENS

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SEVERAL antifungal antibiotics like endomycin and thiolutin, have been isolated from strains of *Streptomyces albus*[1,2]. Thiolutin shows *in vitro* inhibitory effect against a number of fungi. An attempt was made to study the effect of thiolutin on the growth of *Fusarium solani*, *Rhizoctonia solani* and *Sclerotium rolfsii in vitro* and also its effect on rhizosphere microflora of soybean (*Glycine max*) infected with sclerotia of *Sclerotium rolfsii*.

Three soil-borne plant pathogens, *F. solani*, *R. solani* and *S. rolfsii* isolated from *Albizia*, *Quercus* and

Glycine max respectively were used in the present study. Since high concentration of thiolutin is toxic to pathogen as well as host plants, lower (1, 10, 50, 100 ppm) concentrations were selected for studying the growth of these pathogens *in vitro*. Rhizosphere microflora of *G. max* seedlings was assessed after 14 days of foliar spray, as described earlier by Baruah and Dutta[3]. Seeds of *Albizia* and *Quercus* failed to germinate *in vitro*; hence the effect of thiolutin on rhizosphere population of these plants was not studied. Different dilutions of this chemical prepared in Knop's normal solution were used to assess phytotoxicity by root dip treatment.

Thiolutin shows inhibitory activity against the growth of all these pathogens *i.e. F. solani*, *R. solani*, and *S. rolfsii*. Total inhibition was observed in all the concentrations tested, except at 1 ppm where *F. solani* and *R. solani* grew with 64.1 % and 24.8 % inhibition respectively (table 1). Complete inhibition in growth was observed with *Phythium debaryanum*, *Sclerotinia fructicola* at 10 ppm and *R. solani*, *Collet-otrichum gossypii* at 50 ppm[4].

It is non-toxic to soybean seeds and seedlings at lower concentration (up to 50 ppm) and 100 % germination of seeds was observed (table 2) but high concentration (100 ppm) was toxic to seedlings and shows stunting or wilting symptoms in root dip treatment. Gopal Krishnan *et al*[4] also observed disease-free tomato plants inoculated with spore suspension of *F. oxysporum*, *F. lycopersici*, when treated with 10 to 80 ppm of thiolutin. Those treated with 80 ppm concentration show a distinct stunting with epinasty of leaves. Lower concentrations were found active against *Verticillium albo-atrum* and phytotoxic to tomato plants at high concentrations[5] (80 and 100 ppm). These workers also observed increased yield of tomatoes in pretreated infected plants.

Foliar spray decreases fungal and bacteria population but increases actinomycetes in rhizosphere of soybean seedlings (table 2). It was reported earlier that foliar application of organic and inorganic chemicals (trace elements, antibiotics, growth regulator, fungicides) reduce *Verticillium* wilt of tomato[3].

Application of thiolutin increases population of *Trichoderma* and *Pencillium* sp in soil which supports antibiotic producing micro-organisms.

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Table 1 *In vitro effect of Thiolutin on growth of some Pathogens*

Pathogens	*Percentage inhibition*[a] (1 ppm)
Fusarum solani	64.1
Rhizoctonia solani	24 8
Sclerotium rolfsii	100

10 ppm = 100, 50 ppm = 100, 100 ppm = 100 for all the three fungi.

[a] Mean of five replicates

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Table 2 *Effect of Thiolutin on soybean seed germination, Radicle elongation and Rhizosphere.*

Concentration (in ppm)	[a]Seed germination (%)	[b]Mean length of radicle	[c]Phytotoxicity	[d]Rhizosphere micro-organisms in thousands/g dry soil. Fungi (10^4)	Actinomycetes (2×10^4)	Bacteria (3×10^4)
1	100	52 ±0.46	–	31	142	456
10	100	49 ±0 84	–	23	171	409
50	100	49 ±0.04	–	10	197	368
100	80	42 ±0 09	+	8	224	370

[a] Based on 10 seeds on each case; [b] Length of 10 seeds (mm) in each case with standard error, [c] nontoxic, + toxic; [d] Mean of five replicates.