pure culture of *Rhodotorula rubra* (ITCC 2302) for us from Indian Agricultural Research Institute, New Delhi.

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EFFECT OF DIFFERENT CHEMICALS ON *IN VITRO* GERMINATION AND TUBE ELONGATION IN *NYCTANTHES ARBOR-TRISTIS* L.

OUR knowledge about the pollen physiology of night-blooming plants is inadequate and hence the present study was underteken on the oleaceous arboreal plant *Nyctanthes arbor-tristis* L. The effect of sucrose, some of the growth promoters and inhibitors on pollen germination and tube elongation has been studied. Several workers[1–4] have reported the effect of a number of growth regulators and of some inhibitors on pollen germination in different taxa. Though gibberellic acid and indole-3-acetic acid are generally regarded to increase the germination percentage of pollen grains[5–7]. their inhibitory effects have also been reported[8].

Pollen grains collected just after anthesis (5·25 P.M.), were sown in 0·02 ml of water containing 10 ppm of boric acid (control medium). They were grown by hanging drop technique at about 23° C for 9 hours and observed periodically.

The effect of sucrose has been studied by varying its concentration in the basal madium from 1% to 40%. The effects of two growth promoters, indoleacetic acid (IAA) and gibberellic acid (GA) have been studied between 1 ppm to 100 ppm in the medium while the effects of the three inhibitors, sodium fluoride (NaF), 2, 4-dinitrophenol (2, 4-DNP) and maleic hydrazide (MH) were investigated from 1 ppm to 20 ppm.

The effect of sucrose concentration has been presented in Fig. 1, which shows that at 5% concentration of sucrose, the per cent germination is maximum (75%).

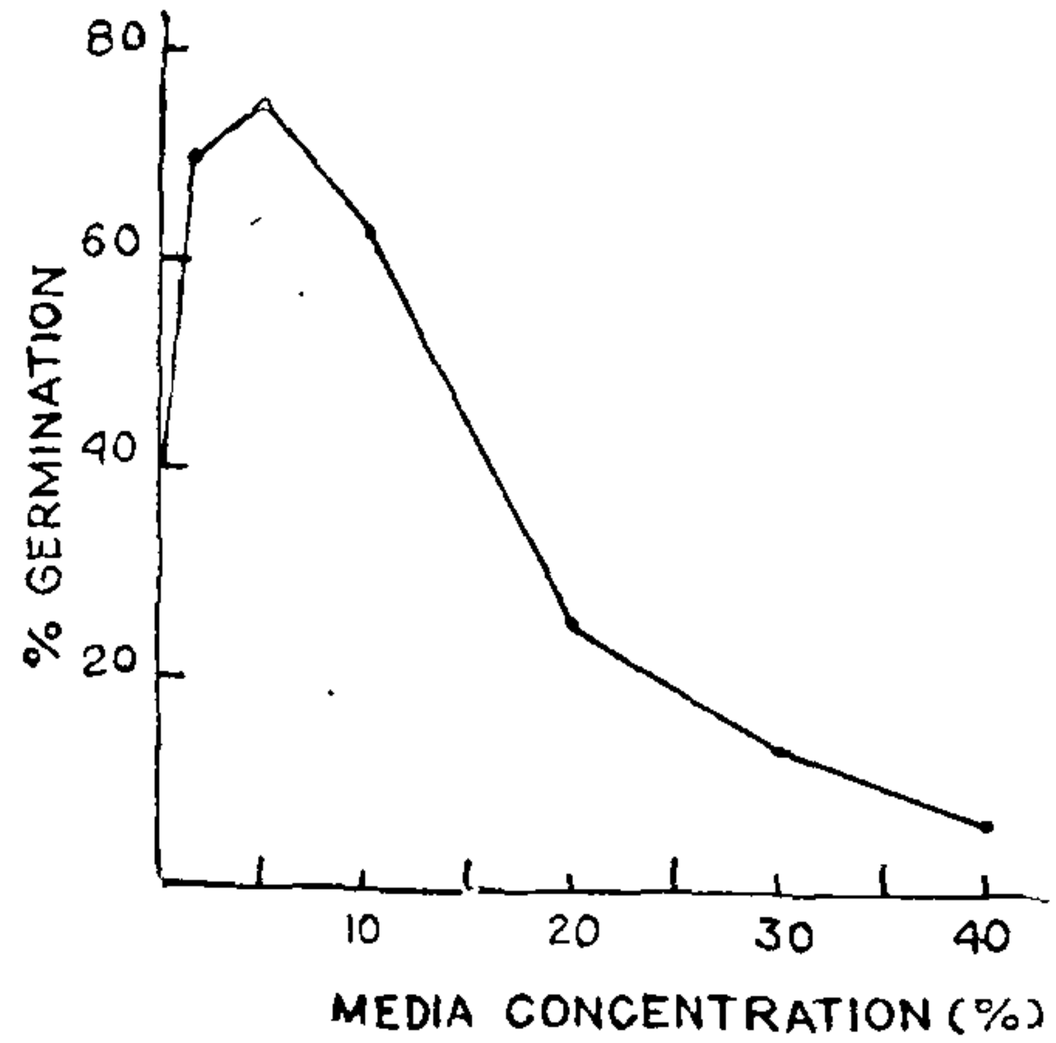

FIG. 1. Effect of sucrose on pollen germination.

Further increase of sucrose concentration did not enhance germination. Between 40–60 ppm concentration of IAA in the medium there was maximal germination of the grains (82-86·5%) associated with the formation of very long tubes (200–240 μ); other concentrations being less favourable. At these concentrations, there was more than two fold increase of pollen germination over the control. GA showed the maximum stimulatory effect at 100 ppm in the incubation mixture, the germination being slightly less than two fold over the control and only in 30–40% cases, the tube elongation was appreciably higher. When a mixture of GA (1–20 ppm) and IAA (1 ppm) was present in the incubation mixture, the germination was very high (87%) though tube elongation was not significant. The results of growth promoters have been presented in Fig. 2.

Among the inhibitors studied (Fig. 3), 2, 4–DNP showed the maximum retarding effect on pollen germination. During the first three hours, there was practically no germination at all concentrations. NaF and MH also exerted distinct inhibitory effect, the latter being more potent, specially during early hours of incubation. It is noteworthy that at all concentrations of these inhibitors, the tube elongation was significantly suppressed and these results are in agreement with previous workers[3].

The endogenous sucrose concentration of the grains may be sufficient for the pollen germination and therefore higher sucrose concentration did not increase germination percentage. Very high sucrose concentrations (30%-40%) prevented pollen germination due perhaps to the high osmotic imbalance. Both the growth promoters had exerted distinct stimulatory effect on

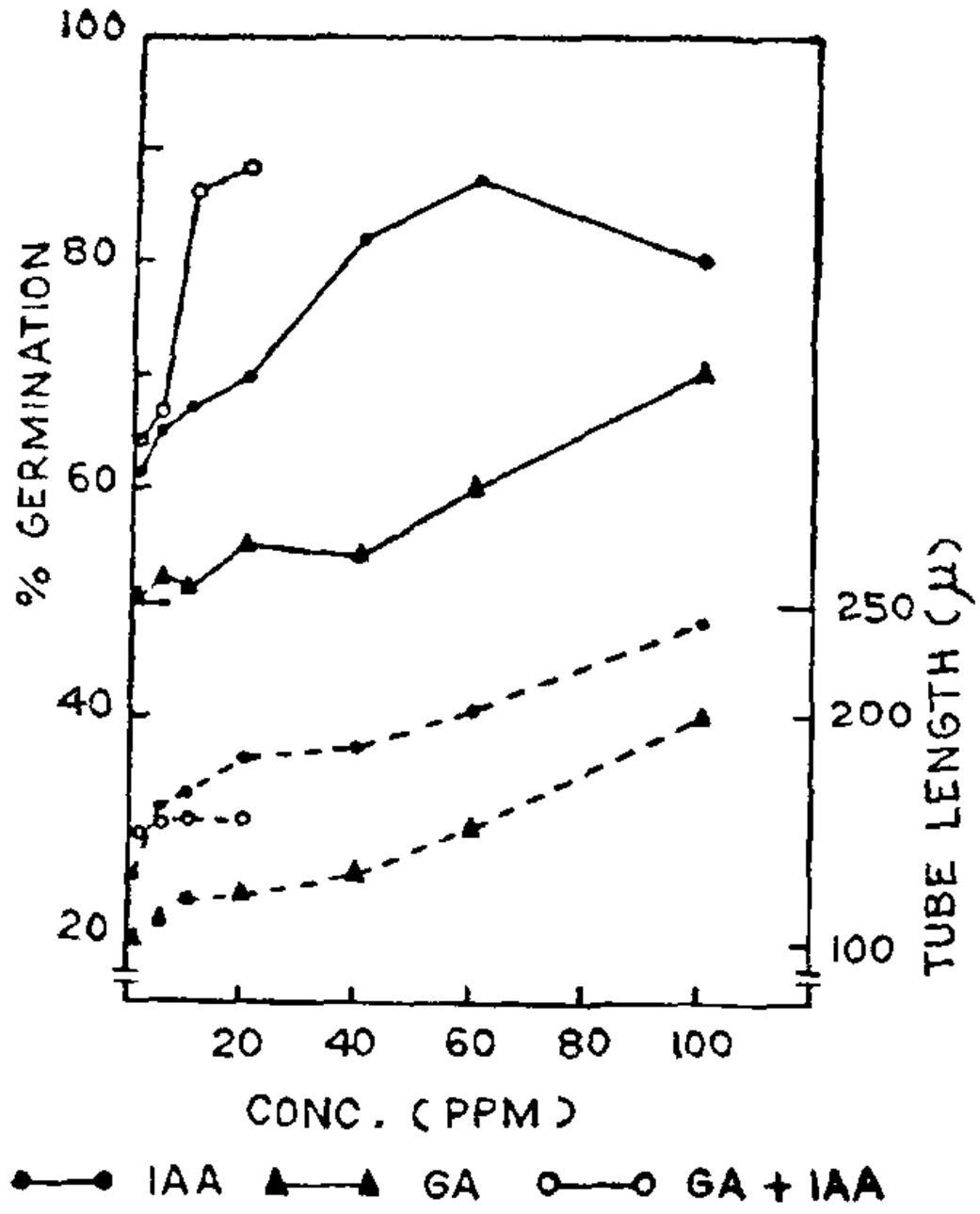

FIG. 2. Effect of growth promoters on pollen germination and tube elongation (solid lines indicate % germination and broken lines indicate tube elongation).

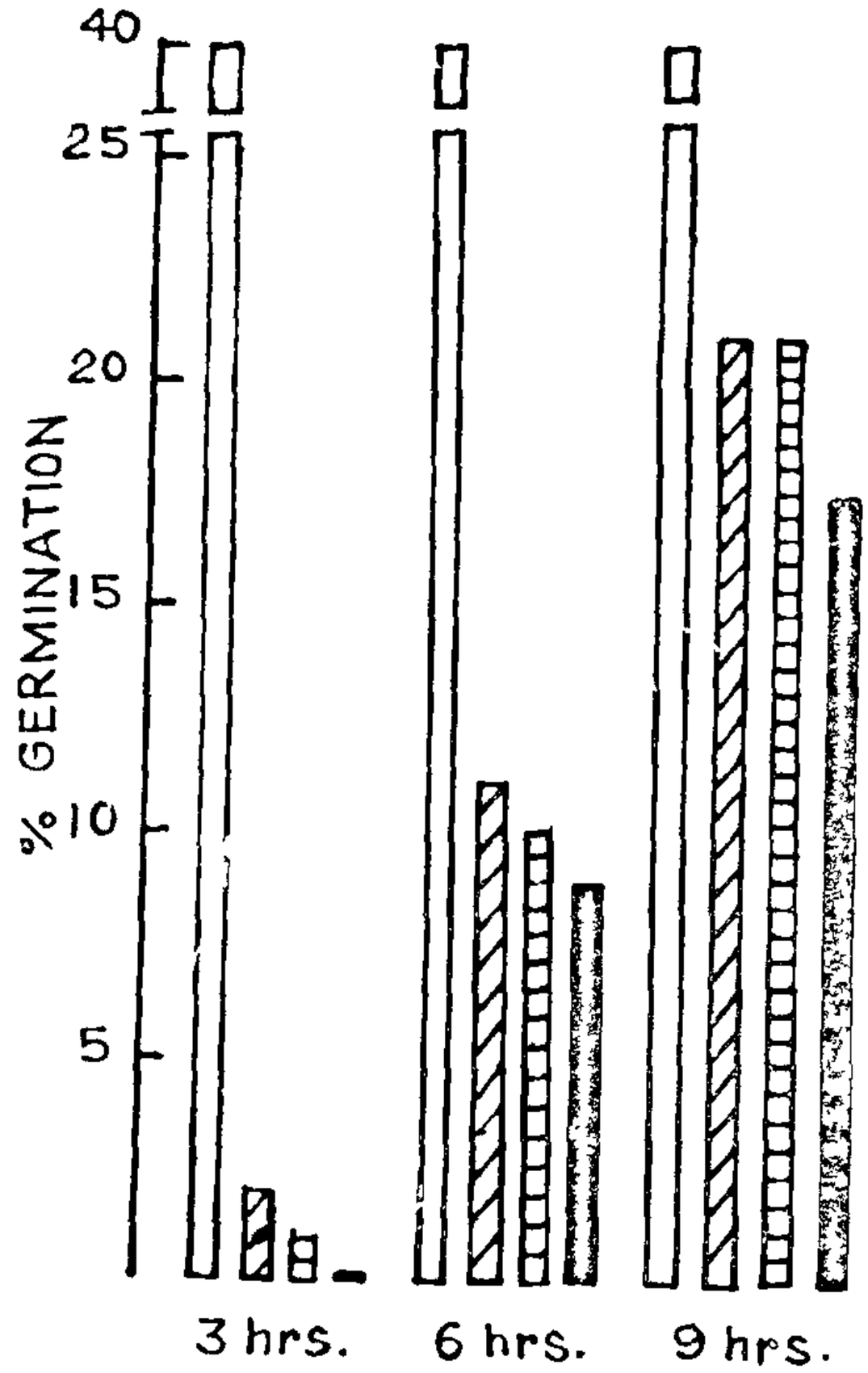

FIG. 3. Effect of inhibition on pollen germination.

pollen germination, though at different concentrations. When IAA and GA were used in combination, they showed synergistic action on pollen germination and thus our results are in harmony with those of previous workers[3,9,10]. However, they failed to bring about concomitant increase in tube elongation since the two growth regulators act independently in this process. This failure may be due to the fact that during tube elongation GA acts on metabolism of structural carbohydrates while IAA acts by incorporating these raw materials into the existing wall primordia. The elongating tubes therefore first respond to the action of GA and then to that of IAA. Our results on the action of the mixture of both IAA and GA on tube elongation support previous workers[3] who favoured the view that GA "sensitised" the tubes which are then acted upon by IAA. Hence there was no synergism between the two compounds in enhancing pollen tube elongation.

Since it is well established that metabolic pathways in pollen are common to nongreen tissues[11], the action of NaF and 2, 4-DNP, are reflected in their retarding effect of both pollen germination and tube elongation. Similarly our data on the action of MH on tube elongation support those of previous workers[12]. It is noteworthy that the inhibitory effects of these chemicals weakened with time. During prolonged incubation, some compounds, synthesized endogenously, react with the inhibitor and ultimately destroy their inhibitory effect. Another possibility is that such endogenous compounds diffuse out from the tubes and antagonise the absorption of inhibitors within the system.

The authors express their sincere thanks to Prof. S. P. Sen, Head of the Department of Botany of this University, for his kind encouragement. Thanks are also due to Sri M. N. Bandopadhyay of Bose Institute for his suggestions.

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A NEW SPECIES OF *LEPISTA* FROM SOUTH-WEST INDIA

DURING the recent mushroom season, a number of Agaricales was collected from the local garden. The detailed studies of the material revealed that it belonged to the mushroom genus *Lepista* (Fr.) Smith, W. G. It was further found that on account of: 1. Pinkish cream colour of the basidiospores in mass, 2. its clitocyboid habit and 3. concolourous nature of the stipe with the pileus, the material under the present consideration belonged to the section Inversae Sing. and Clemen. Furthermore, the present material differed significantly from the existing members of the section inversae, namely, *Lepista gilva* (Pers. ex Fr.) Kummer (= *Agaricus inversus* Scop.[1]), *L. flaccida* (Sow. ex Fr) Pat. and *L. ameliae* Sing. and Clemen.[3,4], in which the spores are never more than 5 μm^2. The present collection, therefore, being significantly different from the existing species of *Lepista*, is accommodated in a new specific taxon, which is named after Professor M. N. Kamat, eminent Indian Mycologist.

Lepista KAMATI sp. nov. (Fig. 1 : *a* and *b*)

HABIT : Clitocyboid.

PILEUS : 2–2·5 cm broad; convex at first, becoming plane with age; umbonate; margin inflexed; colour creamish to reddish brown, darker on umbo; scaly, scales darker than the pileus.

CONTEXT : Thick and fleshy; pale reddish; 0·3–1·2 cm thick.

LAMELLAE : Shortly decurrent; distant becoming narrow towards the stipe; pinkish to pale buffish in colour.

STIPE : 3–3·5 × 0·5–0·7 cm; broad towards the pileus; base slightly bulbous; stuffed; concolourous with pileus or paler.

HYMENOPHORAL TRAMA : Regular.

CYSTIDIA : None.

BASIDIA : Clavate; 4 spored; 25–27 × 3–4 μm.

BASIDIOSPORES : Pinskish-buff in mass; individually: wall hyaline, tuberculate, inamyloid, acyanophilous; germ pore absent; pyriform in shape; apiculate; (7–) 9 (–10) × 5–6 μm.

HYPHAE : With inamyloid and acyanophilous walls; clamp connections present; 4·5–6 μm wide.

HABITAT : In grassy soil.

SEASON : October, 1977.

HOLOTYPUS : AMH 3674 (from Poona).

FIG 1. *a*, Habit photograph of exsiccata; *b*, Photomicrograph of Basidiospores.

LATIN DIAGNOSIS :

Pileus 2–2·5 cm latus, primo convexus demum planus, umbonatus, marginatus inflexus, cremeus vel porphyreus, umbone atratus, squamatus, squamae atratus daum pileum. Contextus crassus vel carnosus, pallido-rubra, 0·3–1·2 cm crassa. Lamellae breviter, decurruntibus, distans vel decrescens versus stipitem, subrosis vel palido bubalinae coloratic. Stipes 3–3·5 × 0·5–0·7 cm, leviter basi bulbosus, inflatus ad pileus, farctus pilei concoloris vel pallidus. Trama regularis. Cystidia nulla. Basidia clavata, tetraspora, 25–27 × 3–4 μm. Basidiosporae subroscobubalinae in massa, singulatim hyalinam, tuberculata, porum germinalem absens, inamyloidea, apiculata, acyanophilis, pyriformis (7–) 9 (–10) × 5·6 μm. Hyphae inamyloideae, acyanophilae, fibulatae, 4·5–6 μm latae. HOLOTYPUS : AMH 3674; TYPUS LOCUS : Poonae (Indiae).

The authors are grateful to Professor M. N. Kamat for going through the manuscript. One of us (KCS) is thankful to the Director of this Institute for the award of the Research Scholarship. The authors are also thankful to the authorities of DST for Research Grant (No. HCS/DST/361/76) under which the present work was carried out.