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THREE NEW HOST RECORDS FROM INDIA

While making a routine survey of parasitic fungi of District Jaunpur (U.P.) during 1975–76, senior author came across severe infections of leaves of *Lycopersicon esculentum*, *Carica papaya* and *Amorphophallus campanulatus* in the localities of village, Darana (Shahganj). The specimens were collected and examined for the identity of the fungi involved in leaf-spoting. The causal organisms on *L. esculentum* and *C. papaya* were found to be *Cladosporium tennussimum* Cooke and *Cladosporium cladosporoides* (Fresen) De Vries respectively while that on *A. campanulatus* was found to be *Phoma tropica* Schneider and Boerema.

The identity of these fungi was confirmed from the Mycologists working at Commonwealth Mycological Institute, Kew, England where the materials have been deposited at IMI No. 211536, 211406 and 210487 respectively.

It has been observed that secondary parasites like *Cladosporium* can accelerate the process of damage and cause considerable loss to the Plant produce. Both *Lycopersicon esculentum* and *Carica papaya* as well as the *Amorphophallus campanulatus* are plants of much economic value and in this remote part of Eastern U.P. where they are grown extensively, the secondary invasion of *Cladosporium* is posing a real threat to the growers.

A perusal of the literature[1–5] has revealed that there is no record on the occurrence of *Cladosporium cladosporioides* on *Carica papaya Cladosporium tennussium*, on *Lycopersicon esculentum* and of *Phoma tropica* on *Amorphophallus campanulatus* and hence these host-parasite associations are new for India.

The authors are thankful to the Director, C.M.I., Kew, England, for confirming the identity of the fungi and Dr. G. C. Srivastava, Head, Botany Department, St. Andrew's College, for facilities for the work.

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EFFECTS OF SOME SELECTED ANTIBIOTICS ON SOIL ALGAE

The use of antibiotics to control plant diseases is an important advance in the science of plant protection. In modern agricultural practices the crop fields are sprayed with antibiotics. During this operation some of these antibiotics does fall on the soil. The potential algicidal value of antibiotics have been investigated on aquatic algae or pure algal cultures by Foter *et al.*,[2] Hutner and Veigh[3], Kumar[4], Lampmen and Arnow[5], Palmer and Maloney[6], Zehnder and Hughes[7]. They opined that algae are generally less sensitive towards antibiotics than bacteria and fungi. In the present investigation the authors made preliminary observations on the effects of four antibiotics on the soil algae of the field of Botanical garden, Institute of Science, Nagpur. The algal members present in the composite soil sample were studied by means of De's[1] modified beneck's liquid culture medium. Twenty-seven algal taxa were observed. Out of these, first eighteen belong to Cyanophyceae and the rest to Chlorophyceae (Table I). Four antibiotics, Agrimycin-100, Aureofungin, Tetracyclin-HCl and Streptocycline were used in five different concentrations, *i.e.*, 100 ppm, 200 ppm, 300 ppm, 400 ppm and 500 ppm to study their effects on the survival of algae to evaluate their algicidal potential. Ten ml solution of the different concentrations of the four antibiotics were added to separate flasks containing 5 gms of soil sample and 190 ml of nutritive culture media. To the flasks serving as control, equal amount of sterilized water were added in place of the antibiotic solution.

The results are presented in Table II. It can be concluded that the soil algae were less sensitive towards

TABLE I

Table showing total number of algal species present in the soil samples from the field of the Botanical Garden, Institute of Science, Nagpur

Sl. No.	Cyanophyceae	Sl. No.	Chlorophyceae
1.	*Aphanocapsa roeseana* de Bary.	1.	*Chlamydomonas* sp.
2.	*Myxosarcina spectabilis* Geitler.	2.	*Ulothrix* sp.
3.	*Oscillatoria annae* Van Goor.	3.	*Protococcus viridis* Ag, Prescott f, Smith, f.
4.	*Oscillatoria formosa* Bary ex Gomont	4.	*Protoderma* sp.
5.	*Oscillatoria subbrevis* Schmidle.	5.	*Oedogonium* sp.
6.	*Phormidium bohneri* Schmidle.	6.	*Oedocladium* sp.
7.	*Lyngbua spiralis* Geitler.	7.	*Spirogyra* sp.
8.	*Lyngbya lutea* (Ag.) Gom.	8.	*Cholorococcum humicolo* Naeg.
9.	*Lyngbya baculum* Gomont.	9.	*Closterium* sp.
10.	*Lyngbya martensiana* Menegh ex Gomont		
11.	*Lyngbya majuscula* Harvey ex Gomont		
12.	*Microcoleus sociatus* West et West.		
13.	*Nostoc punctiforme* Kutz, Hariot.		
14.	*Nostoc commune* Vacucher ex Born. et Flah.		
15.	*Anabaena oryzae* Fritsch.		
16.	*Anabaena* sp.		
17.	*Aulosira implexa* Bornet. et Flahault.		
18.	*Hapalosiphon welwetschia* W. et G. S. West.		

TABLE II

Table showing survival of algae in some selected antibiotics treatment

Sl. No.	Algal sp. Present in control soil	Agrimycin-100 Conc. part per million					Aureofungin Conc. part per million					Tetracyclin-HCl Conc. part per million					Streptocycline Conc. part per million				
		100	200	300	400	500	100	200	300	400	500	100	200	300	400	500	100	200	300	400	500
I.	Cyanophyceae																				
1.	*Aulosira implexa*	P	A	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
II.	Chlorophyceae																				
2.	*Chlamydomonas* sp.	A	A	A	A	A	A	A	A	A	A	P	P	P	P	P	A	A	A	A	A
3.	*Protoderma* sp.	P	P	P	P	P	A	A	A	A	A	A	A	A	A	A	P	P	P	P	P
4.	*Oedogonium* sp.	P	P	A	A	A	A	A	A	A	A	A	A	A	A	A	P	P	P	P	P
5.	*Spirogyra* sp.	A	A	A	A	A	A	A	A	A	A	P	P	P	P	P	P	P	P	P	P
6.	*Closterium* sp.	A	A	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
	No. of algal species surviving: 6	3	2	1	1	1	2	2	2	2	2	4	4	4	4	4	5	5	5	5	5
	Total no. of algal species surviving 27	24	23	22	22	22	23	23	23	23	23	25	25	25	25	25	26	26	26	26	26

P = Present A = Absent

these antibiotics. Of these Agrimycin-100 was more effective than the rest. The Cyanophycean members were resistant to all the concentrations of the four antibiotics, with the sole exception of *Aulosira implexa* which was susceptible only in Agrimycin-100 treatment in higher concentrations.

The Chlorophycean members showed varying degrees of resistance to different antibiotics. Majority of the Chlorophycean members, *e.g., Chlamydomonas* sp., *Oedogonium* sp., *Ulothrix* sp. *Spirogyra* sp. and *Closterium* sp. were found to be very susceptible to higher concentrations of all the four antibiotics used, whereas *Ulothrix* sp., *Protococcus viridis, Oedocladium* sp. and *Chlorococcum humicolo* survived with all the concentrations of the antibiotics. The mechanism of action of antibiotics on algal cells is not clearly known. The lethal effects in some algal forms in higher concentrations of antibiotics may be due to disturbed metabolic stability on account of irrepairable damage caused to DNA.

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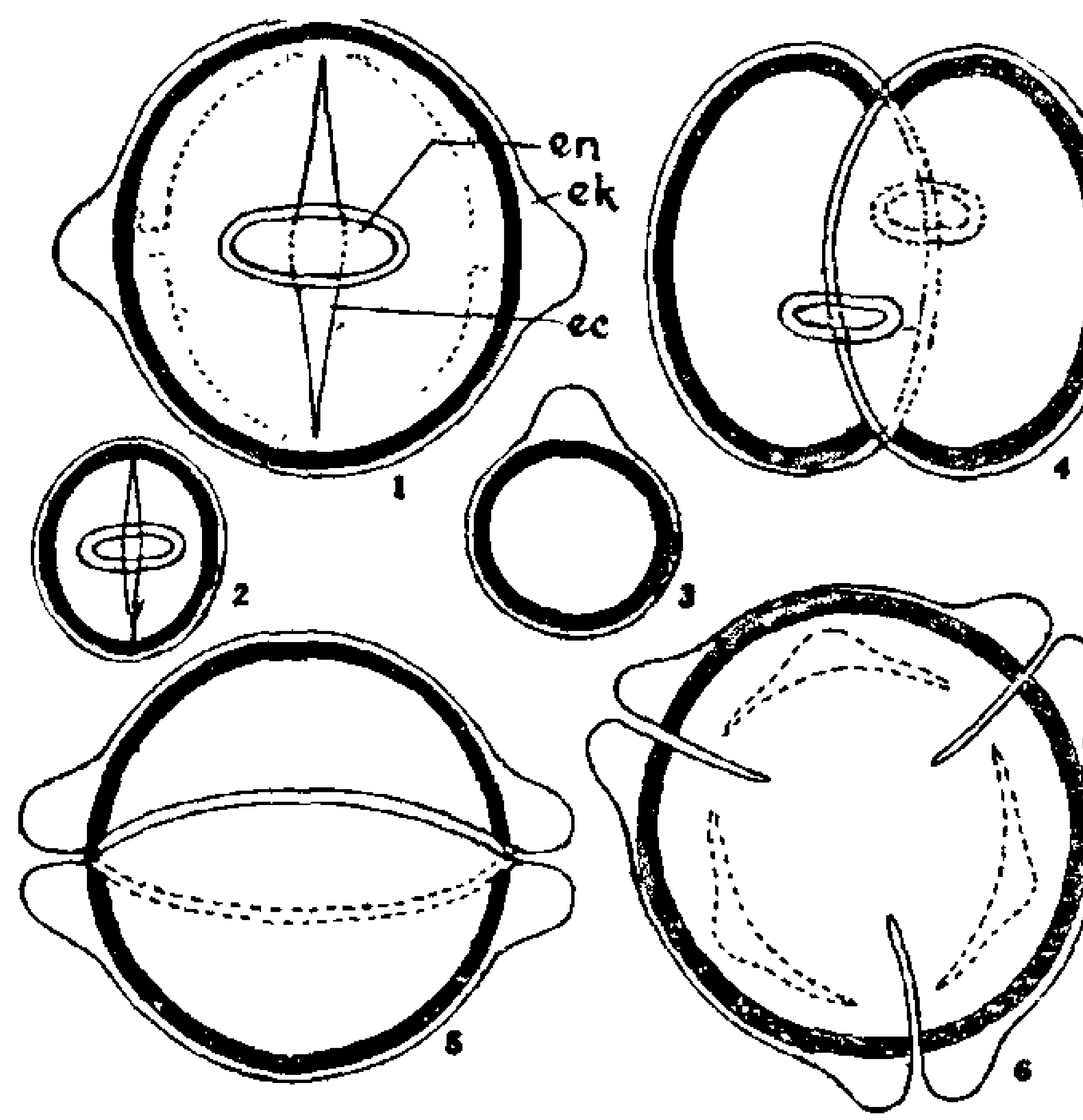
POLLEN DIMORPHISM IN THE HETEROSTYED *SOLANUM MELONGENA* LINN

POLLEN dimorphism in the heterostylons genus *Rudgea* (Rubiaceae) has been recorded as early as 1877 by Darwin. Since then a number of Workers[1-3] described pollen dimorphism associated with heterostyly. Viuilleumier[3] reported heterostyly in 26 angiosperm families including Solanaceae. Köhler[5] in a very comprehensive work described pollen dimorphism associated with heterostyly in the genus *Waltheria.*

Material for the present work was collected from Lucknow and pollen slides were prepared for longistylous and brevistylous flowers separately by the acetolysis method of Erdtman[4]. For morphological analysis about 1,000 pollen grains were examined.

Flowers in *Solanum melongena* are brevistylous and longistylous.

Pollen grains of the species are normally 3-zonocolporate (Fig. 1). Considering both the longi and brevi-stylous forms, three more apertural types have been found namely, 1-aperturate (Figs. 2 and 3), 2-syncolporate (Figs. 4 and 5) and 6-pantocolporate (Fig. 6) (3 equatorial and 3 mesocolpar).



Magnifications × 1,600.

FIG. 1 : 3. Zonocolporate (equatorial view).

FIGS. 2 and 3 : 1. Aperturate (equatorial and polar view).

FIGS. 4 and 5 : 2. Syncolporate (equatorial and polar view).

FIG. 6 : 6. Pantocolporate.

Abbreviations ec—ectocolpium, en—endocolpium, ek—ektexine.

The 3-zonocolporate pollen grains are (PXE) 21–25 μ × 27–31 μ; endocolpium lalongate (1·5 × 15 μ); ectoexine in the endocolpium region thick and conspicuously protruding and granulose exine surface.

In *Solanum melongena* the basic 3-zonocolporate type is found in both the longi- and brevi-stylous flowers. However, in the brevistylous forms, 92% of grains are 3-zonocolporate, while 1-aperturate (size range 12–14 μ × 14–17 μ) are 2%, also 2-syncolporate (size range 12–21 μ × 14–28 μ) are 6% and the 6-pantocolporate (27–31 μ × 29–32 μ) are less than 0·5%, which are completely absent in the logistylous flower type. In *Waltheria* Köhler[5] reported two absolutely different morphotypes, the spinate and the smooth (with greater number of apertures) in the longistylous and brevistylous forms respectively. Erdtman[4] observed larger and smaller grains in the longistylous and brevistylous forms respectively in *Primula.* Pollen dirmophism is known to be associated