TABLE I

Observations on browning of vascular region in roots of coconut (Cocos nucifera *Linn.*)

Condition of Palms	Number of palms	Number of roots examined	Roots showing vascular browning			
			Immediately after Sectioning		5 minutes and more after Sectioning	
			Vascular region		Vascular region	
			Water	*Antioxidant	Water	*Antioxidant
Healthy	25	100	nil	nil	100	nil
Apparently healthy	47	146	nil	nil	146	nil
Diseased	65	230	nil	only one	230	only one

* 2% ascorbic acid or mercaptoethanol.

but original discolouration of tissues was not removed. This is evident by certain exceptional observations, where irrespective of the condition of palms three roots, out of 476 roots examined, showed non-specific discolouration in both water and antioxidants. One root-section had dark walls in two to three cells between largest metaxylem and the second had general discolouration of an entire section. In the third root non-specific discolouration/browning was noticed in the stele of one of the sections in antioxidant. But the remaining section of the same root either in water or antioxidant did not show browning. This further proves that original brown colour of tissues is not washed off by antioxidant solution but it helps in understanding natural discolourations of tissues.

These results bring out that vascular browning does not exist *in situ* in externally healthy roots of diseased palms to any significant level. In the present studies, particular care was taken in selecting apparently healthy roots and reducing the chances of mechanical injury, folding of roots and auto-oxidation and completing sectioning and microscopic examination in shortest time. These might be the reasons that the roots sectional in water too did not show vascular browning in this investigation.

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July 25, 1977.

1. Wardlaw, C. W., *Banana Diseases*, Longman's House, London 1960.
2. Smith, G. M., *Tree Pathology*, Academic Press, New York, 1970.
3. Annonymous, *Coconut Diseases of Unknown Etiology*, Technical Bulletin 1, CPCRI, Kasaragod, 1976.
4. Indira, P. and Ramadasan, A., *Curr. Sci.*, 1968, **37**, 290.
5. Radha, K. and Potty, V. P. *Annual Report, CPCRI*, Kasargod, 1974.
6. —. Saraswathy, N. and George, M. V. *Ibid.*, Kasargod. 1973
7. Mace, M. E. and Wilson, E. M., *Phytopathology*, 1964, **54**, 840.
8. Siegle, M., *Can. J. Bot.*, 1967, **45**, 147.
9. Goss, J. A., *Physiology of Plant and Their Cells*, Pergamon Press, New York, 1973.
10. Radha, K. and Lal, S. B., *Ind. J. Agric. Sci*, 1972, **42**, 410.

PHOTOSPOROGENESIS IN *CERCOSPORA PERSONATA* AS INFLUENCED BY GLYCINE, RIBOFLAVIN AND MALONIC ACID

IT was earlier reported from this laboratory[1,2] that *Cercospora personata* required light for sporulation and that glycine as nitrogen source and riboflavin or malonic acid added to the medium, considerably enhanced light-induced sporulation. Glycine also stimulated growth of the fungus[2] and part of the increase in spore numbers could have been the consequence of the increased biomass. The possibility remained, however, that the sensitivity of the fungus to light had actually been increased by these compounds. The experiment reported here was meant to test this possibility.

TABLE I

Effect of glycine, riboflavin and malonate on light-induced sporulation in Cercospora personata

Medium	Duration of light-treatment and % of colonies sporulating					
	0 min	1 min	5 min	15 min	30 min	60 min
Czapek's	1	1·5	1	4·5	9	15
do. with glycine	1·5	15·5	35	52·5	61	84·5
do. with riboflavin	1	9·5	11	19	26·5	28
do. with malonate	2	10	17·5	21	19	17·5

Czapek's medium either had the $NaNO_3$ replaced by glycine or was amended with riboflavin (2 μg/ml) or malonic acid (0·01 M)[2,3]. The media were inoculated with a suspension of spores prepared from a 10 days old light-grown culture. The inoculated plates, after 3 days in darkness, were exposed on the 4th day to varying periods of light (1 to 60 min) from black light lamps (40 W Sylvania BLB) at a distance of 10 cm). The percentage of colonies sporulating in each plate was determined after 24 hours. The results are presented in Table I.

It was observed that the proportion of colonies sporulating was greatly increased by glycine, riboflavin and malonate. With glycine more than 50% of the colonies had sporulated after exposure to light for only 15 minutes. In the control plates only 15% of the colonies showed sporulation even with 60 minutes of induction. Since a colony showing even a single spore was taken as 'sporulating' the extent of growth did not affect the results in this method. It could, therefore, be concluded that the sensitivity of the fungus to light was greatly enhanced by these compounds.

Thanks are due to the C.S.I.R. for financial assistance and to the Director, University Botany Laboratory, for facilities.

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August 3, 1977.

1. Bhama, K. S. and Swamy, R. N. *Curr. Sci.*, 1969, 38, 570.
2. — and —, *Kavaka*, 1973, 11, 23.
3. — and, *Ibid.* 1976, 4, 65.

TRYPANOSOMA NEINAVANA SP. N. FROM THE FISH, *BARBUS GRYPUS* HECKEL IN IRAQ

TRYPANOSOMES are not uncommon in fishes[1-4]; several species have been recorded from cyprinid fishes. *T. acanthobramae* from a cyprinid fish has been recently reported from *Acanthobrama marmid* Heckel from Iraq[5].

The present communication describes a second species from the blood of barbel, *Barbus grypus* Heckel, collected from river Tigris, Mosul, Iraq.

Fishes were collected with a sein during the summer of 1976 near Neamania village. Blood smears were made by streaking a drop of blood from the severed caudal artery on a clean glass microscope slide. Smears were air-dried, fixed with absolute methyl alcohol and stained with Giemsa's stain. Measurements were made by ocular-lens micrometer under oil-immersion objective.

Trypanosoma neinavana sp. n.

Diagnosis : Trypanosomatidae : Kinetoplastidae Honigberg, 1963, Polymorphic organisms ; slender, broad and intermediate sizes can easily be distinguished in the preparation. All the three forms have the following characteristics : flagellum relatively thin and long; undulating membrane present. kinetoplast oval to pyriform, relatively small, terminal at the end ; nucleus round to oval; cytoplasm alveolar with reddish-purple granules. No afflagellar organisms were seen but some were akinetoplastic, specially those of intermediate sizes. Dividing or crithidial stages were absent in preparations from circulating blood. Infection intensity was high ; one slide had more than 100 specimens.

Slender form : Less abundant than intermediate sizes with a slender body. Cytoplasm stains light blue, is less alveolar and contains no myonemes. Nucleus stains dark pink, is sausage-shaped, positioned lengthwise in the body, and occupies the entire width of the cell. The undulating membrane is indistinct in this stage, but clear in intermediate forms. Average dimensions in microns (15 specimens) : Total length, 36·21 (range 33·40–38·41) ; body length, 18·37 (16·7–20·01) ; length of free flagellum, 17·87 (16·7–20·01) ; nucleus length, 2·81 (2·51–3·34) ; nucleus width, 1·23 (0·84-1·67) ; distance from nucleus to kinetoplast, 12·53 (10·02–15·03) ; nuclear index (posterior extremity ' anterior extremity), 1·83.

Broad form : Relatively rare. Cytoplasm stains intense blue, 2–3 parallel myoneme fibrillae.