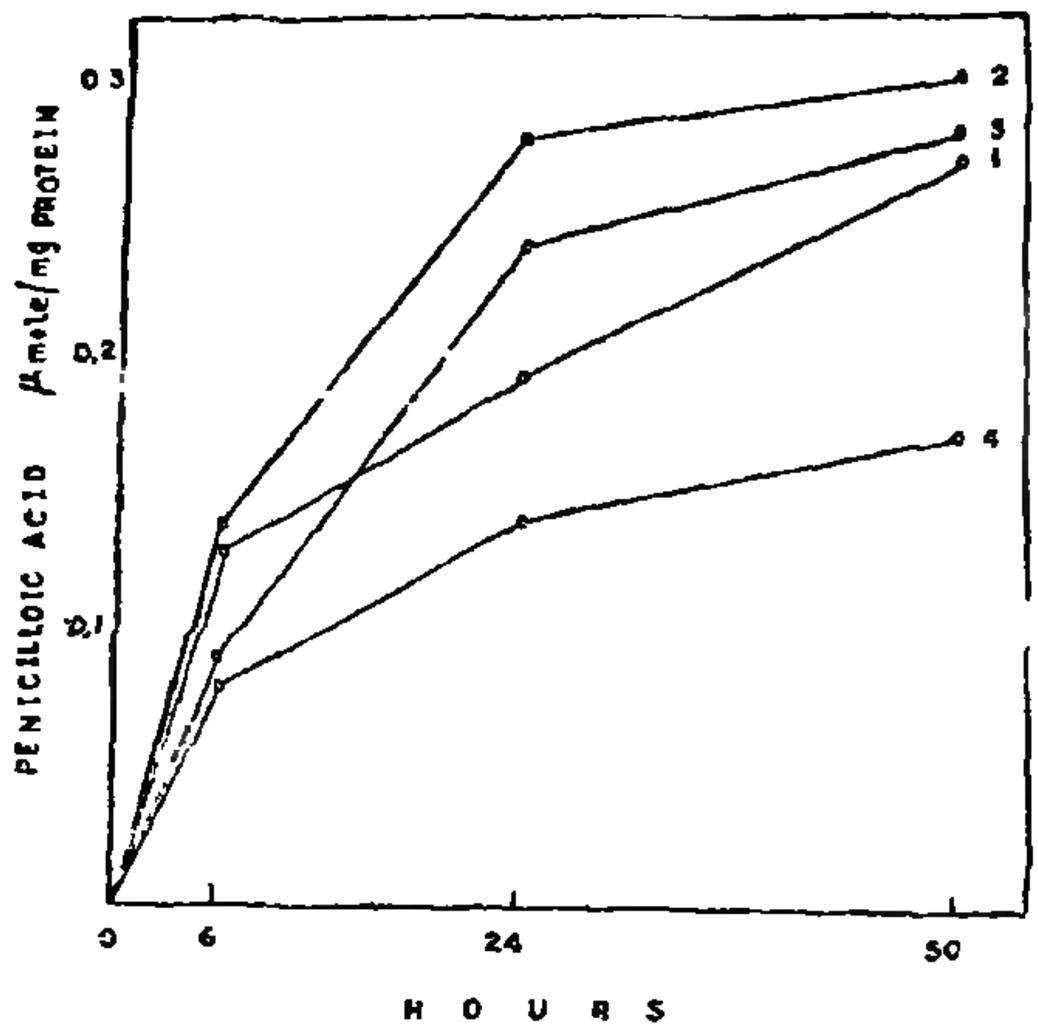

FIG. 1. Activity of enzyme penicillinase in different strains of *Synechococcus cedrorum*. 1—Parent, 2—Pen–R, 3—Strep–R, 4—Polym–R.

of 300 μg/ml penicillin. The Strep–R strain (resistant to streptomycin 250 μg/ml) had a little less activity of the enzyme, while much lower activity was present in the strain resistant to polymyxin (resistant to polymyxin 80 μg/ml). The parent strain also had penicillinase activity but much less than Pen–R strain. It may be pointed out from the observations not reported here that the parent strain was found to be capable of growing only at a very low levels of penicillin (10 units) whereas the Pen–R strain could tolerate up to 300 μg/ml of the antibiotic. However, it appears that the total degradation of penicillin at 50 hr by the parent strain and Pen–R strain is not very significant, as it is at 24 hr. This appears to be due to faster rate of penicillin breakdown by the Pen–R strain between 6 and 24 hrs. The difference between the two strains could be due to some regulatory control.

Synechococcus in an unicellular blue-green alga having 3 μm in length and 1 μm in breadth. It is difficult to classify different species and strains of this alga by morphological features. Biochemical characteristics like the inducibility of certain enzymes and their levels can be profitably used for taxonomic purpose.

One of the authors (RKG) is thankful to UGC for the award of Teacher Fellowship.

June 2, 1981.

1. Ladha, J. K. and Kumar, H. D., *Biol. Rev.*, 1978, 53, 355.
2. Kushner, D. J. and Breuil, C., *Arch. Microbiol.*, 1977, 112, 219.
3. Duthie, E. S., *Br. J. Pathol.*, 1944, 25, 96.
4. Richmond, M. H. and Sykes, R. B., In *Advances in Microbial Physiology* (Eds. A. H. Rose and D. W Tempest), Academic Press Inc., London, 1973, 9, 31.
5. Gupta, R. K., *Ph.D. Thesis*, Banaras Hindu University, p. 1080.
6. Perret, C. J., *Nature* (*London*), 1954, 174, 1012.
7. Allen, M. M., *J. Phycol*, 1968, 69, 114.
8. Alicino, J. F., *Anal Chem.*, 1946, 18, 619.
9. Lowry, O. H., Rosenbrough, N. J., Farr, A. L. and Randal, R. J., *J. Biol. Chem.*, 1951, 193, 265.

A NEW BACTERIAL LEAF-SPOT DISEASE OF *THESPESIA POPULNEA* SOL. EX CORR.

A. S. PATIL AND Y. S. KULKARNI
Department of Microbiology
Maharashtra Association for
the Cultivation of Science
Research Institute, Pune 411 004, India

IN September 1978, a bacterial leaf-spot disease of *Thespesia populnea* was observed in the vicinity of Khandala Ghats (Dist. Pune). The disease first appears on leaves as minute water-soaked translucent round spots with a clear yellow halo. The spots increase in size and become angular. Several spots coalesce towards the tip of the leaf giving blighted appearance. (Fig. 1).

The bacterium was isolated by serial dilution method on P.D.A. (Potato Dextrose Agar) medium. Healthy two month old seedlings showed typical water-soaked spots after automising the bacterial suspension in sterile water on leaves slightly pricked with a sterile pin in about 15 days. The oragnism was reisolated.

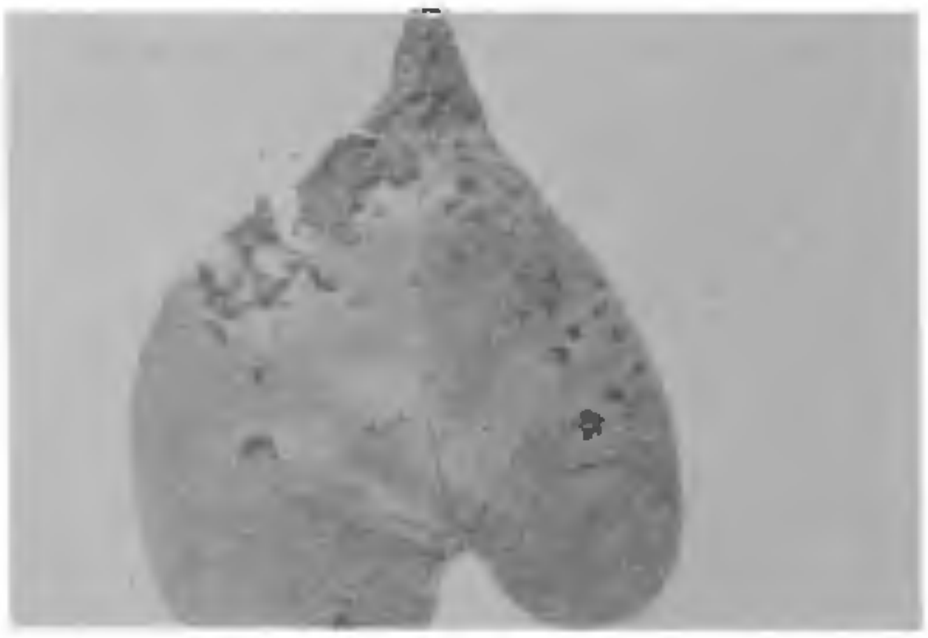

FIG. 1. Bacterial leaf-spots on *Thespesia populnea* Sol. ex CORT.

The organism is a short rod (1·60 × 0·56 μm) with rounded ends, gram negative, non-spore former, non-acid fast, encapsulated and motile by a single polar flagellum. The colonies on P.D.A. are circular with entire margin, smooth, shining, moist with yellow pigment typical of the genus *Xanthomonas*.

The methods for biochemical and physiological characters were as described by Dye and Lelliott[1]. The results are as follows :

Gelatin liquefied, starch hydrolysed ; H_2S produced ; litmus milk cleared ; nitrates not reduced ; M.R. and V.P. tests negative ; indole negative ; catalase positive ; oxidase negative ; lecithinase and tyrosinase positive ; citrate utilised ; Tween 80 hydrolysed ; NaCl tolerance upto 3%. Acid but no gas from glucose, sucrose, fructose, galactose, lactose, trehalose, xylose, arabinose, cellobiose, maltose, ribose and mannose but not from mannitol, dulcitol, sorbitol, salicin, inocitol, melezitose, raffinose and rhamnose. The organism grows well on Kado's D5 medium[2] specific for xanthomonads but not on Kado's D4 medium specific for plant pathogenic pseudomonads. The optimum temperature for growth is 28°–30° C, optimum pH is 7·0. It is a strict aerobe.

In host range studies carried out under optimum conditions of infection with an average humidity of 85% and air temperature ranging from 22°–28° C, the organism infects *T. populnea* and *T. lampas*.

Since all the physiological and biochemical characters of the organism mentioned above conform to those of *Campestris* group of the genus *Xanthomonas* and as per International Standards for naming plant pathogenic bacteria advocated by Dye *et al.*[3], the organism is named as *X. campestris* pv. *thespesiae* pv. nov. The culture has been deposited in ITCC (Indian Type Culture Collection, Division of Mycology and Plant Pathology, New Delhi) under Accession No. ITCC P–33.

The authors are grateful to Dr. S. H. Godbole, Deputy Director and Head, Department of Microbiology, for his interest and encouragement. Thanks are also due to the Director, MACS, Pune, for providing necessary facilities.

June 10, 1981.

1. Dye, D. W. and Lelliott, R. A., *Genus* II *Xanthomonas* Dowson ; In *Bergey's Manual of Determinative Bacteriology*, 8th Ed. (R. E. Buchanan and N. E. Gibbons: eds.), Williams and Wilkins, Baltimore, 1974, p. 243.
2. Kado, C. I. and Heskett, M. G., *Phytopathology*, 1970, 60, 968.
3. Dye, D. W., Bradbury, J. F., Goto, M., Hayward, A. C., Lelliott, R. A. and Schroth, M. N., *Rev. Plant Path.*, 1980, 59, 153.

ORGANOGENESIS IN CALLUS CULTURES OF *CROTALARIA MEDICAGENIA* LAMK.

R. Raj Bhansali* and H. C. Arya
Department of Botany, University of Jodhpur
Jodhpur 342 001, India

* Present Address : Indian Institute of Sugarcane Research, Lucknow 226 002, India.

The root or shoot neoformation in undifferentiated cultures is dependent on a specific equilibrium between the auxins and the cytokinins ratio[1]. Cytokinins induced shoot buds formation in many cultures, as first shown by Skoog and Miller[2]. Several substituted purines bases have shown cytokinin activity; among them N_6 monosubstituted purines have proved most effective for bud induction even in root callus tissues[3]. Various species of *Crotalaria* in tissue culture have been studied for their organogenesis[4,5]. So far there is no report of organ induction from undifferentiated callus mass of *Crotalaria medicagenia*. This paper describes the root and shoot formation in callus cultures of *C. medicagenia* subjected to the influence of some synthetic cytokinins.

Callus tissues were raised from stem segments (5–10 mm) of *C. medicagenia* on modified Murashige and Skoog (MS)[5] medium supplemented with 2,4-D (2,4-dichlorophenoxy acetic acid) and kinetin. The calli were maintained for 18 months in dark growth chambers at 28° + 2° C.

Various cytokinins, *viz.*, kinetin (Kn), benzyl aminopurine (BAP), adenine (Ad) and adenine sulphate (Ads), and auxins, alpha-naphthalene acetic acid (α–NAA), 2,4-D were tested at different concentrations to study the organ formation. Differentiating cultures were maintained for a 16 hr light (3,000 lux) and 8 hr dark cycle. The temperature in the light cabinet was 30° C during light period and 28° C in dark period.

Initially 5–10 mm stem segments from different regions of the seedling were transferred in 2,4-D containing medium for callus induction. Callus initiation was observed on NAA and 2,4-D (each in 0·5 mg/l) containing MS medium within 5 days. Calli grew well after subsequent two or three subcultures. The callus was dark brown to yellowish brown, granular and friable. Frequent lateral root formation was observed on medium supplemented with NAA (5·0 mg/l) and Kn (0·1 mg/l) in explant and callus tissues. These roots were long, fibrous and brown in colour.

Preliminary tests of cytokinins for differentiation showed that callus could be induced bud formation very readily on medium contained high Kn (2·5 mg/l), with or without addition of NAA (0·1 mg/l). Different concentrations of BAP, Ad and Ads were tested