

TABLE II
Copper sulphate intoxication and accumulation of (a) lactate and (b) glucose in serum of three teleosts

Name of the fish	Control	Copper intoxication		
		5 ppm	10 ppm	10 ppm
		(a)		
<i>L. rohita</i>	112.26 ± 24.12	350.17 ± 16.90	680.86 ± 36.22	1568.90 ± 41.54
<i>O. punctatus</i>	68.44 ± 10.58	156.56 ± 8.70	390.74 ± 15.11	680.12 ± 29.14
<i>C. batrachus</i>	45.12 ± 5.38	118.36 ± 12.42	240.92 ± 8.34	364.26 ± 16.38
		(b)		
<i>L. rohita</i>	975.24 ± 68.36	1096.44 ± 105.09	1450.12 ± 84.40	2096.44 ± 180.12
<i>O. punctatus</i>	504.62 ± 32.48	590.48 ± 28.36	820.11 ± 24.18	1024.18 ± 76.34
<i>C. batrachus</i>	636.42 ± 53.12	724.80 ± 34.48	915.04 ± 59.91	1290.48 ± 84.88

Values ($\mu\text{gm/ml}$ of serum) are mean \pm SE of 5 replicates.

and the fall in osmolality of blood serum^{1,6} may be true in present study and the fall in tissue glycogen content and the rise in serum lactate and glucose levels of *L. rohita*, *O. punctatus* and *C. batrachus* may be related to the above phenomena. The rise in renal glycogen content up to 10 ppm copper exposure may be associated with the increased levels of glucose.

It appears that the copper sulphate intoxication causes severe anaerobic stress resulting in the breakdown of tissue glycogen possibly to meet the energy demands in the muscle. The initial accumulation of glycogen in the kidney may be an attempt by the kidney to conserve glycogen and therefore to restore normalcy. At a later stage however the toxicity is so high creating an imbalance in the glycogen content of kidney also. Further studies on these lines are in progress.

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PIPER NIGRUM L. A NEW HOST OF XANTHOMONAS BETLICOLA PATEL ET AL.

DURING June-July 1977, a bacterial disease was observed on pepper plants (*Piper nigrum* L.), growing adjacent to betelvine plants severely infected with bacterial leaf spot, at the College of Agriculture, Vellayani, Kerala. Subsequently the disease was also observed to be prevalent in farmer's field at Mannanthala area of Trivandrum District. This is the first report of a bacterial leaf spot on pepper plants.

The disease appeared as minute water-soaked lesions on the leaf-lamina. As the lesions grew older, the centre of the spot became black, surrounded by a yellowish halo. Sometimes infection began from the leaf margins also. Often a dark pigmentation developing at the infection spot, diffused into surrounding parts of the leaf-lamina, eventually causing defoliation (Figs. 1 and 2).

On microscopic examination of the infected pepper-vine leaves, plenty of bacterial ooze could be detected in the lesions. Isolations from diseased host tissue yielded yellow coloured bacterial colonies. Pathogenicity trials on healthy hosts gave positive results. Morphological and physiological characters of the pathogen such as yellow colony colour, rod shape, negative gram reaction, negative oxidase test, nega-

tive nitrate reduction test, H₂S production, positive catalase test, utilization of carbohydrates such as xylose, glucose, fructose, sucrose, lactose and non-utilization of adonitol, dulcitol, inulin, salicin and inositol indicated that the bacterium causing the leaf spot of peppervine is *Xanthomonas* spp. (Dye, D. W.)¹.

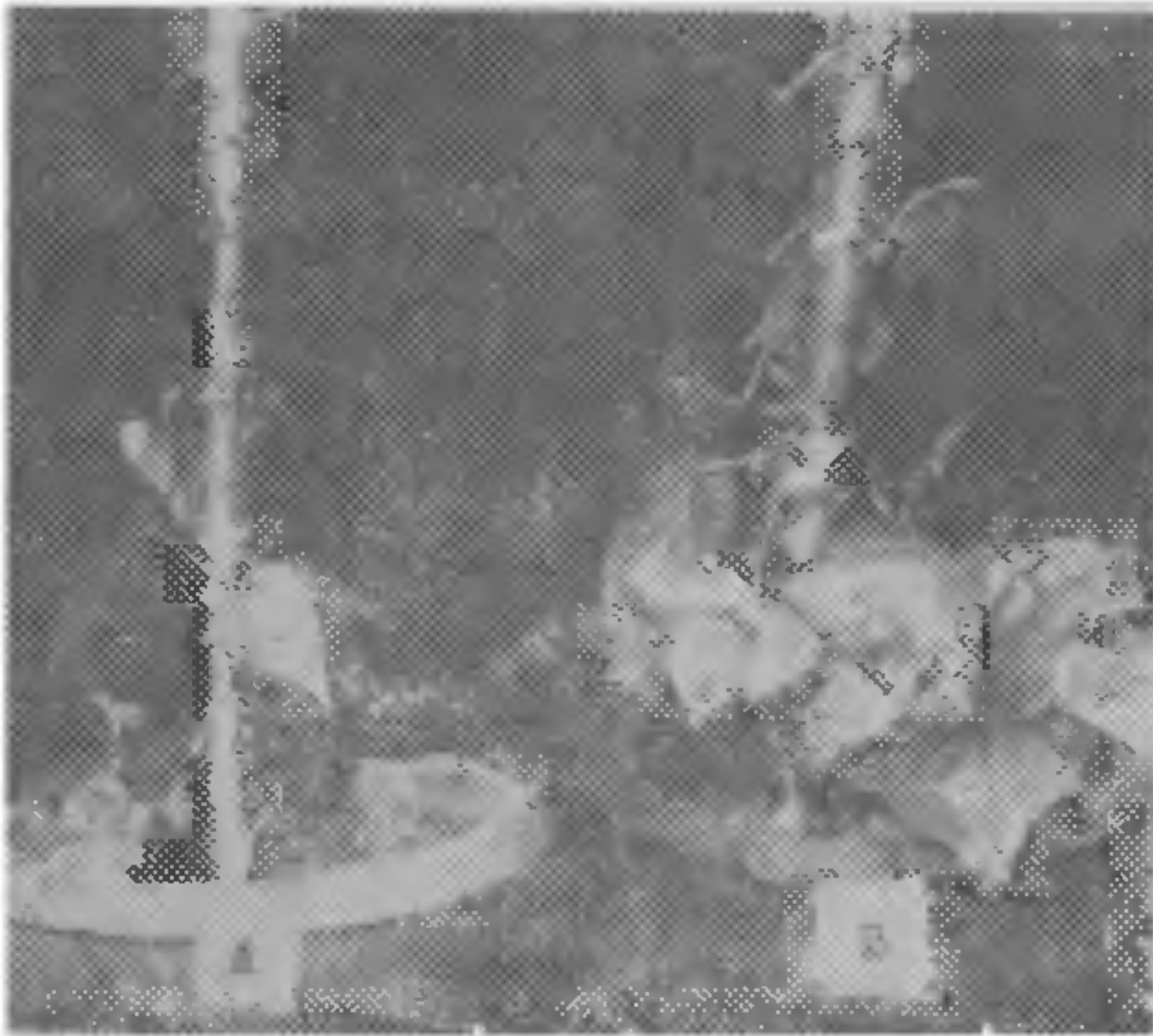


FIG. 1. Bacterial leaf spot on betelvine (A) and peppervine (B).



FIG. 2. Infected leaves. A. Peppervine; B. Betelvine.

Buchanan and Gibbons² have reported that the organism *X. betlicola* goes to the members of the family Piperaceae. Based on the pathogenicity of the organism to pepper leaves, positive results of cross-inoculation tests and the symptomatological characters, the bacterium is tentatively identified as *X. betlicola* Patel *et al.*³. Detailed studies on the pathogen, disease and its control are in progress in this laboratory.

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**SPOROSCHISMA SACCARDOI MASON AND
HUGHES STATE OF CHAETOSPHERIA
COELESTINA HOHNEL, AN ADDITION
TO INDIAN MYCOFLORA**

THE genus *Sporoschisma* Berk. and Br. in India is represented by a single species, viz., *S. nigroseptata* Rao and Rao¹. During the survey on hyphomycetes of Warangal the authors collected another interesting species of *Sporoschisma*, i.e., *S. saccardoi* Mason and Hughes which is reported in this communication.

Sporoschisma saccardoi Mason and Hughes

The fungus was collected growing saprophytically from Pakhal forest (A.P.) mixed with sporodochia of *Berkleasium papillatum* Rao and Rao. Colonies on the substratum scattered, dark-brown, spreading. Mycelium branched, creeping, immersed in the substratum, sometimes aggregated to form black, thick, pseudoparenchymatous stromata. Sporodochia black scattered or in groups from which conidiophores and sterile setae arise. Conidiophores simple, erect, tubular, single or in groups, dark-brown, 1-3 septate, 145.1-252.3 μ m long swollen at the middle, 7.5-11.25 μ m broad at the base, 12.6-13.8 μ m at the apical fertile region (Fig. 1). The portion above the swollen region is much longer than the lower region. The swollen region measures 18.3-36.5 \times 15.6-17.5 μ m. Sterile setae simple, subhyaline to light-brown, 1-7 septate with terminal as well as intercalary capitate regions and measure 80-130 μ m long, 4.3-6.2 μ m broad and 7.5-16.25 μ m at capitate regions. Conidia endogenous-phialospores produced from the apical fertile part of the phialide, dark-brown, cylindrical, 5-septate, catenate 32.3-36.6 \times 8.2-10.1 μ m. The end cells hyaline, thin walled, truncate and the penultimate cells longer (6.2-9.5 \times 8.2-10.1 μ m) than middle central cells (5.7-7.6 \times 8.2-10.1 μ m). Conidia at various stages of development are found to be enclosed in the conidiophore.

The material was collected by S. R. R. on dead culms of *Sorghum* sp. from Pakhal (A.P.) forest on 6-9-1976. During our frequent visits to the same area it was observed that the same material developed some perithecia intermingled with sporodochia of *Sporoschisma*. The perithecial fungus was identified as *Chaetosphaeria coelestina* Hohnel.