GENUS *RADIOCOCCUS* SCHMIDLE (CHLOROCOCCALES) FROM INDIA

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THE genus *Radiococcus* was established by Schmidle[1] in 1902. He segregated it from its allied genus *Westella* Wildmann due to presence of gelatinous matrix and tetrahedral arrangement of the cells and interestingly is the first report of its occurrence from India. During the survey of the fresh water algae of Allahabad, the authors came across this interesting coenobial, green alga *viz. Radiococcus nimbatus* from samples collected in a cemented pond, Botany Department, University of Allahabad. The algal growth was kept under close observation for about a year (1982).

The alga grew as a planktonic form of floating coenobia associated with *Zygnema* sp., *Oscillatoria* sp., *Gloeotaenium*, *loitelesbergarianum* Hansgirg and others. The coenobia have globose to subglobose cells, which are 3–8 μm in diameter and are arranged tetrahedrally in an expanded spherical gelatinous matrix (figure 1). The chloroplast is parietal, cup-shaped with a pyrenoid. Reproduction takes place by division of a cell into four autospores (figure 2). The present alga agrees well with the type species in measurements and other essential morphological characters.

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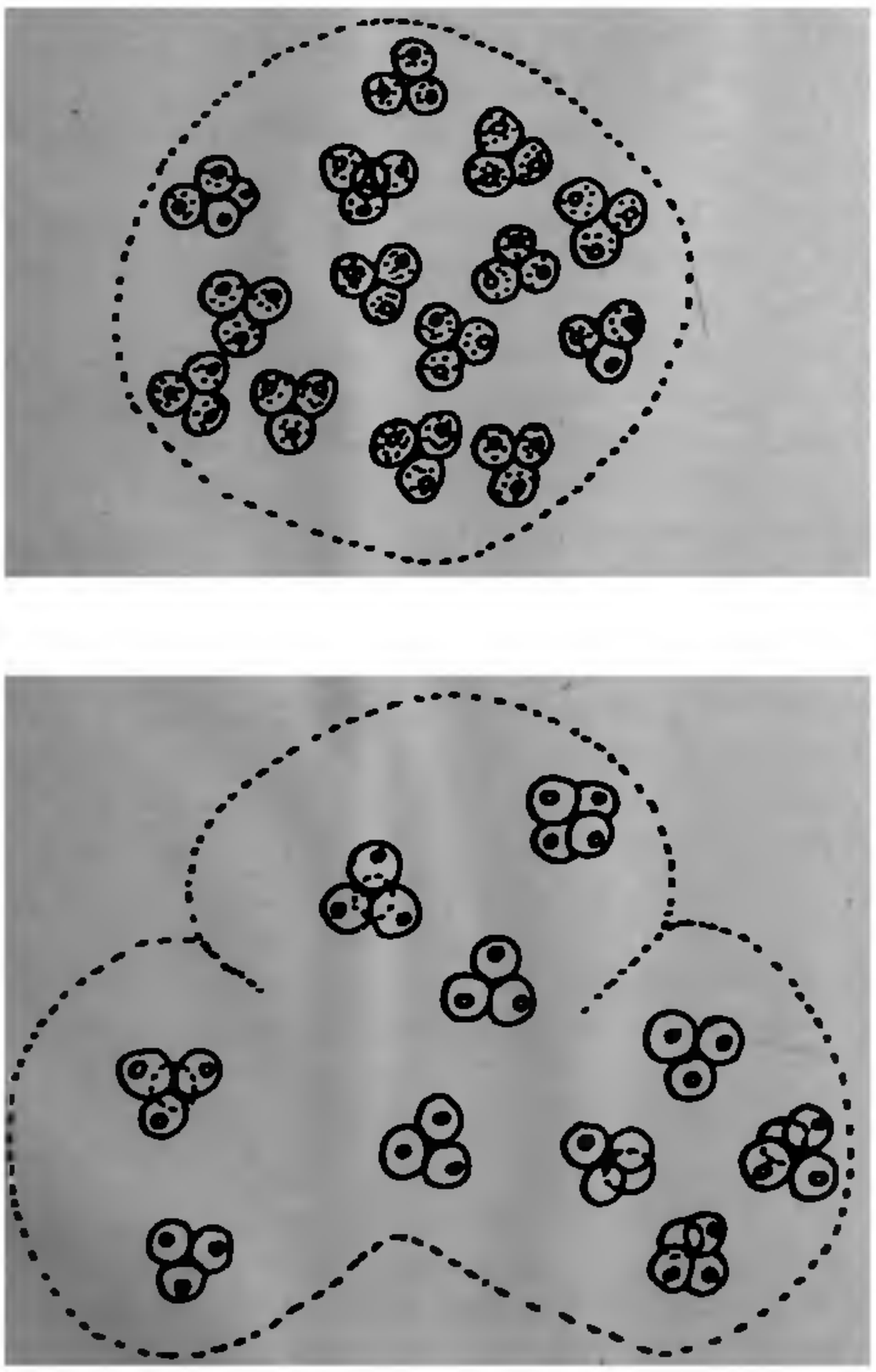

Figures 1 & 2. *Radiococcus nimbatus* (de Wildm.) Schmidle. **1.** Vegetative coenobium ×800. **2.** Showing formation of autospores ×800.

TOXIN PRODUCTION BY *PESTALOTIA PALMARUM*

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LEAF blight of coconut caused by *Pestalotia Palmarum* Cooke extensively damages the leaves and consequently reduces their economic value[1]. The symptoms include necrosis and extending chlorosis which suggest the possible involvement of diffusable toxic metabolites. This communication reports the isolation of a phytotoxin from the cultures of the fungus.

The fungus was raised on 50 ml of Czapek's liquid medium amended with 0.1% of yeast extract, pH 6.0, in Erlenmeyer flasks by transferring a loopful of mycelium from stock cultures on agar slopes. Since transferring cultures to shakers immediately after inoculation resulted in a slurry, the cultures were incubated for 3 days without agitation and then transferred to Gallenkamp orbital incubators (100 rpm) at 25° C. On the 7th day after inoculation the filtrate was collected by straining through 4 layers of cheese cloth and then filtered through Whatman No. 1 filter paper. Cold acetone (-18° C; equal volume) was added to it and left overnight at 4° C. The precipitate formed was separated by centrifugation (10,000 × g × 20 min) and discarded. The supernatant liquid was removed *in vacuo* and the residue extracted with ethylacetate (3 times). The ethylacetate extract was concentrated and fractionated on thin-layer chromatographic plates (Si. gel, 20 × 20 × 0.5 cm.) developed in *n*-butanol acetic

acid water (4 1:1 v/v) ascendingly. The chromatogram was divided into 8 equal parts, eluted in water and placed on needle punctures on the abaxial side of the young coconut leaves. Only the eluate from a yellow band (Rf 0.75) was effective in inducing visible symptoms *i.e.* necrosis by 24-48 hr and chlorosis by 72 hr with longer incubation the chlorotic area extended longitudinally. Culture medium processed and tested similarly served as control. Toxic activity was not evident from any of the control fractions. With the toxic substance the symptoms appeared only when placed on pin-pricks and not on intact surfaces.

On spray tests with chemical reagents the yellow compound reacted positively to iodine vapour, folin-phenol, sulphanilic acid, *p*-nitroaniline-sodium hydroxide[2]; it absorbed light when viewed under long-UV. The yellow substance was found to be dialyzable and thermostable. It was soluble in water, chloroform, ethylacetate, butanol, ethanol and acetone but not in benzene. It had absorption maxima at 253, 260 and 270 nm. The toxin appears to be a low molecular weight phenolic compound with simple molecular structure.

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1. Menon, K. P. V. and Pandalai, K. M., *The Coconut Palm-a manograph*, Indian Central Coconut Committee, Ernakulam, Kerala.
2. Stahl, P., *Thin layer chromatography*, Academic Press, London, 1969, p. 1041.

EFFECTS OF NIA 23509, A JUVENILE HORMONE ANALOGUE ON *DYSDERCUS CINGULATUS* (RED COTTON BUG)

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THE morphological, physiological and biochemical responses to the action of juvenoids, have been well studied: Slama[1], Bafhr[2] and Martin[3] have estimated the qualitative and quantitative changes in haemolymph proteins (HP) at different developmental stages of insects. Certain JHA and JH mimica also cause failure in reproduction when immature stages of insects are treated.

This paper presents the effect caused by NIA 23509 on reproductive system, and on protein content in the haemolymph of a supernumerary nymphal instar (sixth instar) of *Dysdercus*.

The colony of *Dysdercus cingulatus* was reared in the insectary as described by Geering[4]. Dilutions of NIA 23509 were prepared in acetone and 1 μl of the solution was applied topically to freshly molted fifth instar nymphs using an agla micrometer syringe. Treated insects were held in observation cages until final molt and were fed on cotton seeds soaked in water. Percent inhibition of growth was calculated from the graph drawn between the log dose and probit inhibition. Insect haemolymph was collected by centrifugation and proteins from the collected haemolymph samples were precipitated using 10% and 5% trichloracetic acid (TCA). The precipitate (PPT) was first washed with alcohol saturated with sodium acetate, with alcohol and ether (1:1) and finally with ethyl ether. The dry PPT was dissolved in 0.6 N KOH and the total haemolymph proteins were estimated by Lowry's method[5]. Bovine albumin serum was employed as a reference standard.

Reproductive systems of supernumerary nymphs, male and female were dissected out in insect Ringor solution. The reproductive organs were examined under binocular microscope and compared with a normal one.

The dissected material was fixed in Bovin's fixative, passed through alcoholic grades, stained with Borax carmine and mounted in Canada balsam.

The log dose for 50% and 90% inhibition, calculated from the graph were 0.0208 μg and 0.0794 μg/ nymph. The extra larval instars and adultoids emerged after treatment were incapable of reproduction. Blood proteins of such instars when estimated were very low compared to normal adults and fifth instars (table 1). This drastic decline in total HP is the effect of JHA treatment. Moreover, there was a difference in the amounts of HP of the two sexes. Males had more HP

TABLE 1

Total haemolymph proteins of normal (fifth instar, adults) and treated (supernumerary nymphs).

Stage of insect	Total proteins in mg/ml of haemolymph	
	Male	Female
1. Supernumerary nymph (sixth instar)	35 mg.	20 mg.
2. Normal adult	57 mg.	78 mg.
3. Fifth instar nymph (normal)	61 mg.	