with methanol, concentrated *in vacuo* and then extracted twice with equal volumes of chloroform. The chloroform extract was evaporated to dryness and the residue dissolved in the minimum volume of benzene. The crude benzene extract was separated on thin layer chromatography (TLC) in chloroform-ethanol (97:3, V/V) solvent system. A single antifungal zone detected by TLC bioassay with *Curvularia* sp. was eluted in 5 ml absolute ethanol and assayed against mycelial growth of *C. sasakii*.

The phytoalexin-like substance thus obtained induced marked inhibition in the radial growth of *C. sasakii* and a total inhibition at 300 μl/ml (Fig. 1).

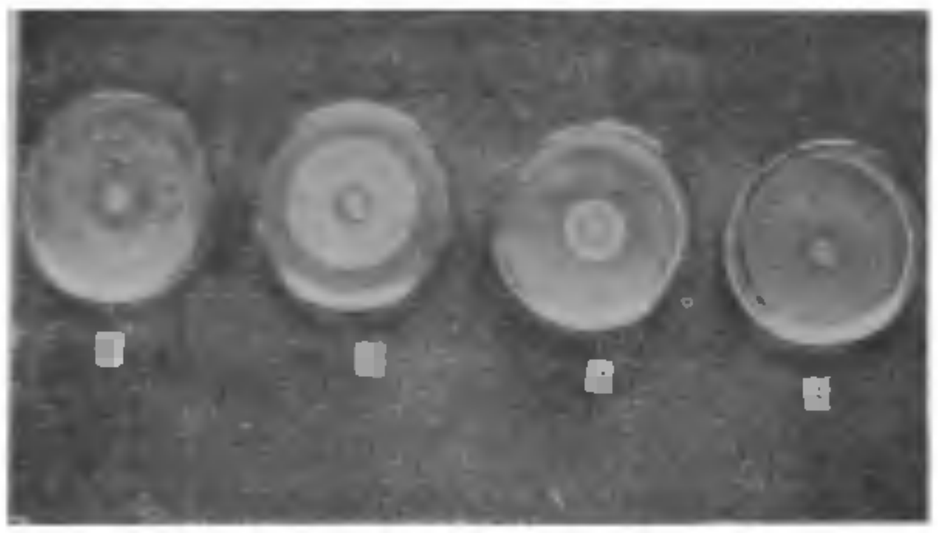

FIG. 1. Phytoalexin-like substance induced inhibition in the radial mycelial growth of *C. sasakii* at 100 (1), 200 (2) and 300 (3) μl/ml, respectively. Absolute ethanol (100 μl/ml) served as control (c). Note the absence of any inhibition in control plates.

The extract also caused germination inhibition (upto 70%) of conidia of *Helminthosporium oryzae* and *Curvularia* sp. Malformations were induced by the phytoalexin extract on the spores of *H. oryzae*. Extracts from control seeds did not cause any such inhibition nor malformation.

Clearly phytoalexin-like substance is produced by the germinating paddy seeds inoculated with *C. sasakii*. Phytoalexin production in rice was indicated for the first time by Uehara[3] in 1958. However, Cartwright *et al.*[4] characterized the phytoalexin from *Pyricularia oryzae* infected rice leaves as momilactones A and B. But our substance differs from either of these because of the difference in its mobility on TLC plates and UV absorption spectrum.

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A FRUIT ROT OF *PYRUS COMMUNIS* CAUSED BY *TRICHODERMA VIRIDE*

DURING marketing, some fruits of 'Nukh' (*Pyrus communis* L.) were found infected showing light brown to dark brown spots on their surface. Approximately 5–7% fruits were spoiled.

Following conventional mycological techniques, the pathogen, *Trichoderma viride* pers. ex. fres was isolated and found persistently associated with the pathogenesis. The artificially inoculated[5] injured healthy fruits when incubated at 28° C (± 2° C) developed the characteristic symptoms. No symptom was however, displayed on uninjured fruits. The control fruits in either case remained healthy throughout. Repeated reisolations from the inoculated diseased fruits yielded the said pathogen.

Initiation of the rot symptom was evident with the appearance of dense greenish spore mass at the site of superficial incision. Slowly an irregular peach coloured patch developed at the site of inoculation. The affected portion finally turned soft, pulpy, water soaked and light brown in colour, emitting bad odour.

Keeping in view the wide variation of temperature and relative humidity prevailing in plains, hills and coastal areas of India during transportation and marketing of this fruit, the efficiency of the pathogen was determined by inoculating the healthy fruits and, subjecting them to different temperatures (20–22° C, 28° C and 35° C) and a relative humidity of 30% (low), 60% (moderate) and 90% (high). Three replicates, each consisting of three fruits, were employed. The maintenance of relative humidity in desiccators and the calculation of percentage rot were done by adopting the procedure and formula suggested by Prasad and Bilgrami[3].

The maximum rot of fruits was caused by the pathogen at 60% relative humidity. Expectedly, only 5% rot was caused at low humidity (30%), but rather unexpectedly, even at the higher relative humidity of 90%, only 7–10% rot was induced by the pathogen. It may be noted that optimum relative humidity (60%) favoured by the pathogen, for the maximum rot production in 'Nukh' fruits is, in fact, prevalent in major parts of the country and comparatively for a longer duration of the year.

The pathogen was able to decay 40% fruit tissue at 20–22° C incubation temperature which was further enhanced, though marginally to 45–50% at 28° C within the same period (*i.e.*, 8 days). Still a higher temperature of 35° C was found to be detrimental to the pathogen activity as evident by only 5·7% rot induced. The pathogen thus exhibited a wide range of optimum temperature, *i.e.*, 20–28° C which is also a favourable factor for disease development in India for a longer duration. The hard 'Nukh' fruits are stored for a long period and transported over long distances from the site of production; they are thus liable to be injured and consequently spoiled.

Trichoderma viride is a notorious rot pathogen of *Citrus* fruits and vegetables[2,4] though it has been reported that *T. viride* infected-*Citrus* fruits are not infected by *Penicillium digitatum*, another *Citrus* fruit rot pathogen[1]. The perusal of literature indicates that *T. viride* is a new fruit rot pathogen of 'Nukh' fruits.

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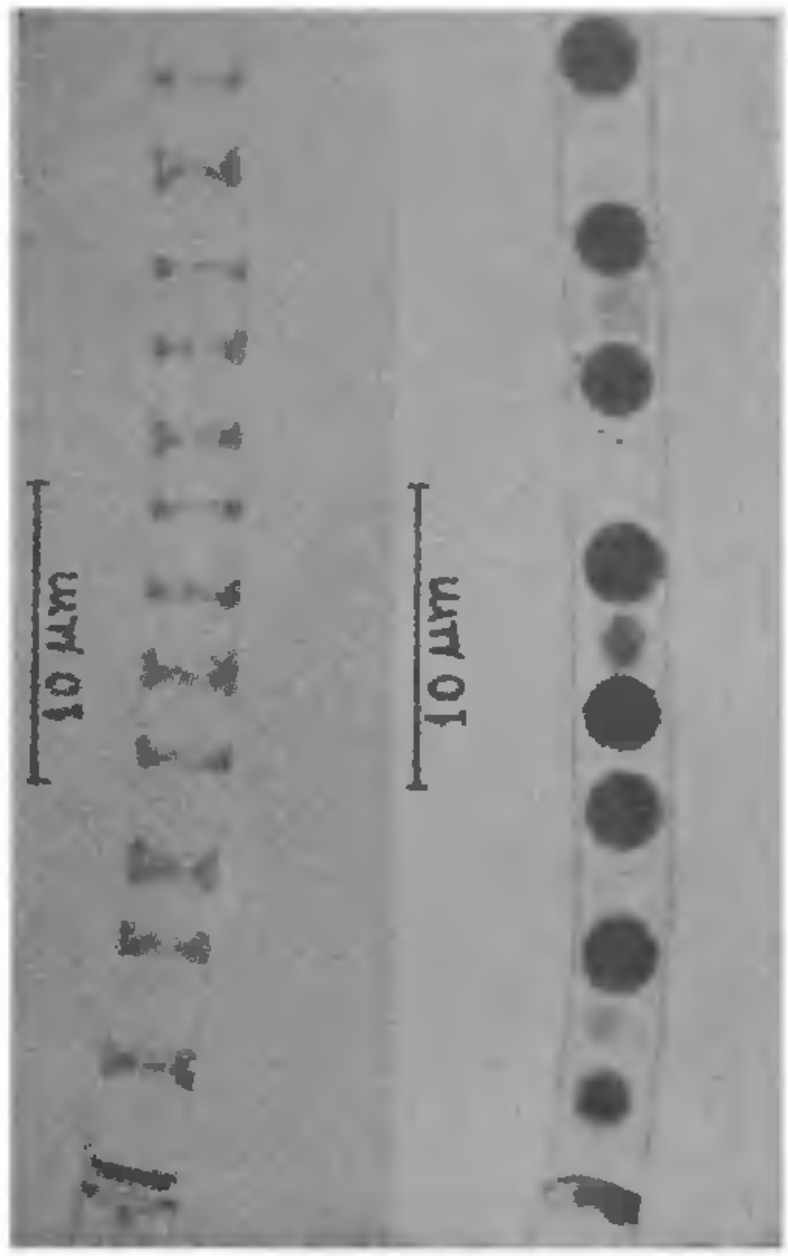
ON *SPHAEROPLEA ANNULINA* (ROTH) AG., AN INTERESTING GREEN ALGA

Of the six known species of *Sphaeroplea*, *S. annulina* is cosmopolitan in distribution[1] and has been reported from a variety of climatic conditions on all continents. In India, Randhawa[2] recorded this alga in a lake situated at an altitude of 3,000 metres in the Lahul Valley in Punjab Himalayas. Recently, the author collected it from Meerut. This appears to be the first report of this alga from the Indian plains.

S. annulina (Ulotrichales, Chlorophyceae) is a filamentous, unbranched and coenocytic green alga (Fig. 1) occurring as dark green free-floating masses exclusively in freshwater habitats. Though worldwide in distribution, it is rather rare, occurring sporadically, abundant in some years and totally absent in other years. Further, the vegetative life span of the alga is very short and the oospores (Fig. 2) are reported to have a long dormancy period (several years)[1].



1 2

Figs. 1–2. Fig. 1. Portion of a cell showing annular chloroplast. Fig. 2. Portion of a cell showing oospores.

In view of the above interesting facts and also the existing discrepancies in accounts of the cytology as well as life-cycle of this alga[3], an intensive search in and around Varanasi was made during the last several years, but unfortunately without success. Recently, it was collected from Meerut and an investigation was undertaken.

The alga grew well in Godwards' inorganic nutrient medium fortified with 10% soil-extract (1 : 1) in a light intensity of 1400–2000 lux, a 16 : 8 h. photoregime at 22 ± 1° C. The vegetative period was exceedingly short (nearly a week in culture), after which the alga entered the reproductive phase. It was amazingly fertile, the whole algal mat soon getting converted into a mass of oospores. The ripe oospores were bright orange spherical structures, with a thick membrane bearing slightly blunt, conical and hollow spines. Since the oospores did not germinate under culture conditions and the accidental breaking of vegetative filaments and regeneration of the fragmented bits happened to be the only mode of propagation, the maintenance of the alga in cultures was a difficult task. However, this problem was overcome by frequent subculturing at very short intervals.