

The chromosomal aberrations scored was 6.36% with 15 min exposure and 21.25% with 60 min exposure in fixations made after 24 hr of irradiation.

The present results support the study of Sarma and Agrawal¹ on *R. hieroglyphicum* and *O. gunnii*. In all the three green algae, *O. gunnii* proved to be more sensitive to ultrasonic waves, showing 31.84% chromosomal aberrations at the highest dose of 60 min, *R. hieroglyphicum* showing 25.64% chromosomal aberrations was found more resistant than *O. gunnii* but sensitive in comparison to *O. virceburgense*, showing 21.25% of chromosomal aberrations. Thus, *O. virceburgense* proved to be more resistant in showing chromosomal aberrations than *O. gunnii* and *R. hieroglyphicum*. This may be attributed to the smallest chromosome size of *O. virceburgense*, providing comparatively less area for the action of ultrasonic waves.

25 March 1982

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A NEW LEAF SPOT DISEASE OF MAIZE FROM KUMAON, HIMALAYAS

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DURING the survey of diseases on maize (*Zea mays* L.) a severe leaf spot disease was observed at Vivekananda Laboratory experimental farm, Hawalbagh (Almora). The disease made its appearance as small chlorotic spots with a light-coloured halo and 0.3 to 0.5 cm in diam. The diseased portions of the leaf were sterilized in 0.1% mercuric chloride solution and planted on potato dextrose agar medium in sterilized Petri-dishes. It was identified as *Curvularia lunata* var. *aeria* (Wakker) boedijn (*Cochliobolus lunatus*) Nelson and Haasis) by comparing the characteristics with the type description in literature¹⁻³. Finally, the pathogen was confirmed from CMI, Kew, England (IMI NO. 263048a).

A perusal of literature⁴⁻⁷ indicates that the disease is prevalent only in the warm tropical part (Jobner, Rajasthan) of the country. The present investigation, therefore, reveals the existence of the pathogen in temperate Himalayan region of India.

The authors are highly indebted to the Director, Vivekananda Laboratory for Hill Agriculture, Almora for providing research facilities. We are also grateful to the Director, CMI, Kew, England for confirmation of the pathogen.

12 May 1982

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OCCURRENCE OF URSOLIC ACID IN EUCALYPTUS LEAVES

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NO chemical work seems to have been done on the eucalyptus species, and this is taken up for investigation in this paper. The leaves of *E. alba*, *E. crebra*, *E. grandis*, *E. melanophloia*, *E. microtheca*, *E. rudis*, *E. staigeriana*, *E. tessellaris* and *E. torelliana* were extracted with petroleum ether, acetone and alcohol respectively. Acetone extracts on column chromatography over silica gel yielded compounds A (minor), B (major) and some minor components.

Compound A was identified as 5-hydroxy-4', 7-dimethoxy-6, 8-dimethyl flavone (Eucalyptin)¹ by NMR, IR and by direct comparison with an authentic sample.

Compound B crystallised from CHCl₃-MeOH as needles m.p. 286-88°, [α]_D²⁰ + 69° (CHCl₃) and gave +ive L.B. test (Pink \rightarrow Blue). Acetate, m.p. 245-46°, [α]_D²⁰ + 58° (CHCl₃). It was identified as Ursolic acid² by IR, NMR and by direct comparison with an authentic sample.

TABLE 1

Percentage of ursolic acid in the leaves of various *Eucalyptus* species

Name of <i>Eucalyptus</i> species	% oil	% Ursolic acid	% Eucalyptin
<i>E. alba</i>	0.30	1.50	—
<i>E. crebra</i>	0.16	0.85	—
<i>E. grandis</i>	0.30	0.60	0.010
<i>E. melanophloia</i>	0.10	0.92	0.014
<i>E. microtheca</i>	0.60	2.50	0.015
<i>E. rudis</i>	1.10	1.00	0.018
<i>E. staigeriana</i>	1.20	1.00	—
<i>E. tessularis</i>	0.25	1.30	0.037
<i>E. torelliana</i>	0.20	0.64	0.032

This is the first report on the occurrence of ursolic acid and eucalyptin (excepting in *E. torelliana*) in the respective eucalyptus species. These results also indicate that the *E. microtheca* leaves can be used for the isolation of large amounts of ursolic acid.

The petroleum ether and alcohol extracts did not give any compound.

The author is thankful to Dr. M. C. Tewari for facilities, to Dr. K. N. Subramanian, Forest Research Centre, Coimbatore for help, collecting the leaves and to Prof. J. A. Lamberton for authentic samples of acetyl ursolic acid and eucalyptin.

14 May 1982

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THE LUMINOUS BACTERIUM, *BENECKEA HARVEYI* IN THE GUT OF LEIOGNATHID FISHES

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LUMINOUS bacteria are versatile heterotrophs with high adaptability. They have been reported not only from the surface waters of tropical, temperate and polar marine regions but also from a depth of several

metres^{1,2}. Having been known as symbionts in the light organs of fishes³⁻⁸, saprophytes on the surface of fishes and crustaceans^{1,9}, enteric bacteria in several marine organisms^{1,10,11} and parasites in crustaceans⁹, they also occur as general planktonic microbial populations^{2,12}. Studies conducted in India are limited, but they are known to occur in marine, estuarine, back-water and mangrove biotopes^{8,11}. The present report is of interest as *Beneckea harveyi*, a species of luminous bacteria, occurs as enteric form in the gut of 6 species of leiognathid fishes (Family: Leiognathidae) viz., *Gazza minuta*, *G. achlamys*, *Secutor ruconius*, *Leiognathus splendens*, *L. bindus* and *L. dussumieri*, in Porto Novo waters.

Fish samples were collected from Porto Novo fish landing centre and the adjoining Vellar estuary (lat. 11° 30' N, Long. 79° 46' E) between March and May 1978. They were transferred to sterile polythene bags and brought to the laboratory in insulated containers. Totally 41 fishes (table 1) were used within 2 hr after collection. The specimens were externally sterilised with 60% ethanol to avoid contamination. Swabs of gut contents were taken using sterile cotton-tipped applicator sticks and inoculated with the sea water nutrient agar medium (SWC) consisting of 750 ml of sea water, and 250 ml of distilled water, 5g of bacto-peptone, 3g of yeast extract and 3 ml of glycerol, and the pH adjusted to 7.2.

TABLE 1

Isolation of luminous bacteria from leiognathids

Species	Number of specimens utilised	Number of luminous strains isolated
<i>Gazza minuta</i>	7	12
<i>G. achlamys</i>	4	7
<i>Secutor ruconius</i>	8	10
<i>Leiognathus splendens</i>	10	18
<i>L. bindus</i>	7	14
<i>L. dussumieri</i>	5	15
Total	41	76

Cultures were grown at 25° ± 2° C. Within 24 hr of inoculation bright luminous colonies appeared on the medium. After 36 hr well separated single luminous colonies were picked up randomly in the dark room using sterile tooth picks and were transferred to SWC agar slants for later taxonomic characterisation.

A total of 76 luminous isolates were tested for extra-cellular enzymes. Especially, lipase, amylase and gelatinase are useful to differentiate *Beneckea* from the closely allied *Photobacterium*⁶. Of these, 62 iso-