SHORT SCIENTIFIC NOTES

Stimulation of Latex Production in Papaya (*Carica papaya* L.) by 2-Chloroethane Phosphonic Acid*

It has been reported recently that 2-chloroethane phosphonic acid (Ethrel) increased latex flow and dry rubber yield in rubber trees (*Hevea brasiliensis* Mull)[1] and *Ficus elastica*[2]. Since papain, a proteolytic enzyme, extracted from the latex of papaya fruits is used commercially for tenderisation of meat and other pharmaceutical industries, studies were conducted to investigate the effect of ethrel on the latex yield in papaya. Four apparently uniform papaya plants (variety Coorg Honey Dew) having 8-10 green, fully developed fruits, were used for this preliminary trial. An aqueous solution of ethrel (200 ppm), containing a sticker teepol, was sprayed on two papaya trees, fully wetting the leaves, fruits and stem. The two control trees were sprayed with water. Three uniform fruits were selected in each tree for the extraction of the latex which was done by giving two 4" long longitudinal cuts on the fruits. The latex was collected in petridishes, of known weight, till the flow was completed. The dry weights of the latex from each fruit at different days of tapping were recorded. The fruits were tapped four times at two days interval. The results are presented in Table I.

TABLE I

Effect of Ethrel on latex yield in Carica papaya

Treatment	No. of fruits tapped per tree	No. of tappings	Total latex yield in gm (dry wt)	Average latex yield per fruit per tapping gm (dry wt)
Control (2 trees) ..	3	4	4·52	·1883
Ethrel 200 ppm (2 trees)	3	4	11·11	0·4629

F-test sig* SEm ± 0·0420 C.D. at 5% 0·09
C.D. at 1% 0·12.

The data in Table I show that ethrel significantly increased the production of latex by 145% over control. In the ethrel treated fruits, the latex flow was found to be much faster than in the control trees.

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A Paper Chromatographic Method for the Detection of Argemone Seeds in Mustard Seeds

One of the specifications for mustard seeds under Prevention of Food Adulteration Rules is that it should be free from argemone seeds[1] (*Argemone mexicana* Linn.). Ferric chloride test[2-3] for argemone oil is the usual test in practice for the detection of argemone seeds in mustard seeds.

This paper describes a paper chromatographic method for the detection of argemone seeds in mustard seeds based on the flavonoid constituents with differential colour and R_f values present in these seeds.

Mustard seeds suspected to contain argemone seeds are powdered in a grinder attachment of a Waring Blender. The powdered material is defatted with petroleum ether in Soxhlet apparatus. 5 grams of the defatted material is extracted with three 25 ml portions of hot ethanol (70%) under reflux. The alcoholic extracts are pooled and filtered through cotton and the filtrate is evaporated to dryness on a boiling water-bath. The residue after treatment with solvent ether to remove the residual fat (the ether layer discarded) is extracted with 8 ml of hot methanol, cooled, filtered and the final volume adjusted to 2 ml.

About 25 micro-litres of the methanol extract is spotted on a Whatman No. 1 filter-paper, and developed using Butanol-acetic acid-water (4 : 1 : 5) for 24 hours after previous saturation. The chromatogram is dried in air and sprayed with a solution of 5% aluminium trichloride in ethanol and again air-dried. The

chromatogram is observed under ultra-violet light. A yellowsh-green spot with R_f value 0·8 is characteristic of argemone seeds and a blue fluorescent spot with R_f value 0·65 is characteristic of mustard seeds. The test can conveniently be adapted in routine laboratories.

Authentic samples of argemone seeds supplied by the Director of Agriculture, Government of Mysore are gratefully acknowledged.

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On the Appearance of a Streaky Discoloration in the Surface Water of the Kakinada Bay

While engaged in a hydrobiological and faunistic survey of the Godavari Estuarine systems, we noticed on 25 August 1961 a dark brown, vivid, wavy 'streak' in the Kakinada Bay opposite the Kakinada canal light house. An examination of this sample of water collected from the streak revealed the presence of a few species of diatoms, *Thallassiothrix frauenfeldi*, *Coscinodiscus* sp., *Pleurosigma* sp., *Chaetoceros* sp., *Nitzschia closterium* and *N. longissima*. *N. longissima* constituted about 90% of the total diatom population in the sample and accounted for 12·77 million cells per litre.

While an extensive literature has been built up in recent years on the discoloration of water due to 'Red Tides' caused by dinoflagellates, there are only a few reports on the diatoms causing similar discoloration. From India, Murthy and Venkatramaiah[5] reported a chocolate brown colour in the waters at the Krishna river confluence due to a bloom of *Asterionella* (*japonica*?) and later Subba Rao[8] made observations on a similar bloom and discoloration off Waltair in the Bay of Bengal due to an outburst of *A. japonica*.

Bainbridge[2], Brongersma-Sanders[3] and Pieterse and Van Der Post[6] have made extensive reviews of this phenomenon of discoloration of water and the causative agents for the same. Bary[1], Langmuir[4] and Woodcock[9] have suggested that winds play an important role in aggregating dispersed planktonic organisms into highly concentrated and clearly demarcated streaks. According to the above authors these organisms are propelled in the direction of the wind and they form a series of lines of convergence and divergence giving a wavy contour to the concentrated streaks of the organisms. Rama Sarma and Ganapati[7] have drawn attention to the monsoon surface current patterns in the Bay of Bengal and their influence on the current patterns in the Kakinada Bay. According to them August is a transition month when the northerly current is still weak and the southerly current not well established. A series of lines of convergence and divergence are formed due to the interaction of the two opposing currents and also due to the tidal flow over the uneven bottom of the shallow bay. The complex pattern of surface water movements may be responsible for the concentration of the diatoms into streaks observed by us.

We are thankful to the I.C.A.R. for financial assistance, the Andhra University for facilities and Dr. D. V. Subba Rao for identifying the diatoms.

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A Case Report of Rabies in Swine

Rabies in swine is an uncommon condition. These are a few reports from other countries[1,2]. The purpose of the present report is to record its occurrence in swine in India.

On October 23, 1971 a carcase of a healthy Yorkshire sow belonging to Government Livestock Farm, Hissar, was brought to the Department of Pathology for post-mortem examination with the history of excitement followed by loss of muscular control of the hindquarters.

On necropsy no significant lesions were observed. Impression smear obtained from the hippocampus area of the brain and stained by Sellers' stain, revealed presence of intracytoplasmic inclusion bodies in the nerve cells morphologically indistinguishable from Negri bodies. On histopathological examination slight neuronal degeneration and gliosis was observed in cerebellum as well as hippocampus which are in agreement with those reported by Smith and Jones (1966).

Morehouse *et al.* (1968) did not come across Negri bodies in swine died of rabies. Merriman (1966), however, demonstrated their presence only in one of the three brain specimens examined. In the present report demonstration of rabies virus with the use of fluorescent antibody technique as well as by mouse inoculation made the diagnosis specific.

The authors are thankful to Head, Department of Bacteriology for confirming rabies in brain by FAT and mice inoculation test.

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Some New Records of Nodulated Wild Leguminous Plants

The family Leguminosae although tropical in origin enjoys cosmopolitian distribution. With its about 700 genera and 14,000 species, it is claimed to be the second largest family among dicots. Leguminous plants are well known for their symbiotic association with rhizobia responsible for biological nitrogen fixation within the root nodules. However, according to Allen and Baldwin (1954), approximately 10–12 per cent of the leguminous plants have been surveyed for nodulation with little attention focussed on wild leguminous plants.

During a survey of nodulated wild leguminous plants of the hilly tracts of the Maharashtra State, the following ten species are found to be new additions to the global listings :

(1) *Alysicarpus monilifer* DC. (2) *A. tetragonolobus* Edgew. (3) *Clitoria biflora* Dalz. (4) *Crotalaria filipes* Benth. (5) *C. nana* Burm. f. (6) *Dalbergia sympathetica* Nimmo. (7) *Geissaspis cristata* W. & A. (8) *Smithia capitata* Dalz. (9) *S. purpurea* HBK. (10) *S. pycnantha* Benth. Of special mention is the record of a species within the new genus *Geissaspis*.

All these species belong to the subfamily Papilionaceae. They exhibit good nodulation as characterised by the nodule number, size and pink leghaemoglobin content of the nodules.

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Poona-4, *April* 21, 1972.

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Susceptibility of *Acanthospermum hispedium* Dc. as a host to *Heliothis peltigera* Schiff. (Lepidoptera, Noctuidae) in the Sudan

During the course of survey of Tabanidae in May, 1970 in Wadi Nyala area, Darfur Province, some larvae were observed damaging the leaves of *Acanthospermum hispedium*. Larvae were collected and reared in Khartoum Veterinary Research Laboratory, at room temperature (25° C to 30° C).

Adults were identified and confirmed by Commonwealth Institute of Entomology as *Heliothis peltigera* Schiff.

Acanthospermum hispedium is a well-known plant to livestock owners in Darfur Province and named locally 'Horab El Hawsa'.

The problem of *A. hispedium* has been previously reported by Mukhtar[4] in Gazala Gawazat areas, Darfur Province. He believes that the infestation has been introduced into the Sudan from west Africa by nomadic cattle owners of 'Ambararow' and probably other tribes. Recently, its distribution in Kordofan and Darfur Provinces has been studied by Hassan[3].

Heliothis zea (Boddie) is known as a serious pest in U.S.A.; the larvae feed on a number of plants including corn, tomato and cotton (Borror and De Long)[2]. *H. peltigera* Schiff. had not been reported before from Darfur Province, hence it is believed to be the first record found on *A. hispedium* from this area. During study of American Bollworm, Balla[1] reported that *Helicoverpa armigera* Hubn. were the subspecies encountered in the Gezira and Managil areas but *Heliothis peltigera* Schiff was recorded mainly from safflower grown in the Gezira Research Farm.

In view of deteriorating effect of *A. hispedium* on pasture as well as the general animal health and production preliminary studies for its control were experimented by Mukhtar[4], using four selective herbecides, *viz.*, 2, 4-D, 2, 4, 5-T, Molax Chlorea. Molax was found to be comparatively most effective in destroying 75% of the weed composition. However intensive studies are needed to study the effect of this pest on pasture in Southern Darfur with the aim to evaluate the practicability and effect of *H. peltigera* Schiff as a means to control this particular weed.

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Botanical Identities of "Ajmod" and "Makara"

There is some confusion about the correct botanical identity of ajmod an indigenous drug. In the literature *Apium graveolens*[1] and *Carum roxburghianum*[2,3] are mentioned as the botanical sources of ajmod.

Qadry and Atal reported another umbellifer 'makara[4] adulterant of ajowan and caraway which was identified as *Carum roxburghianum* by Botanical Survey of India, Calcutta, Coimbatore and Royal Botanical Gardens, Kew, England.

The ajmod was identified by Botanical Survey of India, Calcutta, as fruits of *Seseli indicum*, W. A. which was confirmed by its morphological features such as globose shape, presence of distinct ridges and stellate hairs at the apex as described in the flora[5].

Makara (*Carum roxburghianum*, Benth and Hook), ajmod (*Seseli indicum*, W. A.) and celery fruits (*Apium graveolens*, L.) have now been finally identified as three different umbellifers with three different botanical sources.

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Incidence of Antagonistic Actinomycetes Against Fusaria *

In vitro antagonism of several hundred Indian and Russian soil actinomycete isolates belonging to the genera of *Streptomyces, Streptoverticillium, Chainia, Streptosporangium, Actinosporangium, Nocardia* and *Micromonospora* against *Fusarium vasinfectum, F. moniliforme, F. oxysporum, F. udum, Pyricularia oryzae, Drechslera oryzae, D. sorokiniana, Glomerella cingulata* and *Colletotrichum capsici* indicated varying degrees of efficiency. The percentage activity ranged from 37 to 16. *Fusarium*, in general, showed minimum inhibition zone *in vitro* as compared to *Pyricularia oryzae, Glomerella cingulata* followed closely by *Drechslera* spp. This is of interest as the species of Fusaria used in the tests are known to be soil inhabitants, whereas *P. oryzae, G. cingulata* and two species of *Drechslera* are leaf spot fungi. The rationale of screening antibiotic producing actinomycetes, *vis-a-vis* phytopathogenic fungi has to be further understood in light of these results.

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