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Physical Sciences Section

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SYNTHESIS OF HETERO-BICYCLIC COMPOUNDS

*Part -VIII. Formation of 6-Alkyl-2,2-Dimethyl-4, 5-Dioxo-7-Hydroxy-Pyridino [4,3-*d*][1,3]Dioxins*

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(Received July 9, 1992)

Aminopyranodioxins (II), derived from aliphatic amines, isomerise to yield the corresponding pyridino-dioxins (III). Chemical conversions and spectroscopic data are provided in support of their structure.

Key words. Pyrano-dioxin, Pyridino-dioxin, Aliphatic amines.

EVALUATION OF TOXICITIES INDUCED BY SHORT INTERVAL, HIGH DOSE METHOTREXATE

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(Received December 29, 1991; revised July 24, 1992)

Folic acid plays an important role in DNA synthesis, during cell division. Folic acid antagonists, therefore, interfere in cell growth, and are in use in cancer chemotherapy since long. Methotrexate, a folic acid antagonist, has shown good results in the treatment of a number of malignancies. Most of the clinical protocols, applied in cancer treatment, are not in use in their standard form to achieve maximum benefit and they are often leading to considerable toxicities. Evaluation of toxicities, induced by high doses of Methotrexate, repeated after short periods of time, was carried out in rabbits. Each animal received 40 mg/kg of body weight/72 hr. upto four doses, of Methotrexate, without citrovorum factor rescue through intraperitoneal route. Nine different gross toxicities, which are usually developed during Methotrexate therapy, were observed. Hepatotoxicities and nephrotoxicities were determined by biochemical and histopathological changes. No considerable or statistically significant general, biochemical or histopathological changes were found.

Key words. Methotrexate, Toxicity, Chemotherapy.

Short Communication

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The Heat Capacity, C_v , for $\text{Co}^{2+}/\text{MgO}$ Single Crystal

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(Received December 15, 1991; revised July 6, 1992)

absorption). According to him, the specific heat capacity, C_v , is given by the following expression:

$$C_v = 9NK_BZ (T/\theta_D)^3 \int_0^{\theta_D/T} \frac{x^4 e^x}{(e^x - 1)} dx \dots\dots\dots (1)$$

where θ_D , is known as a Debye characteristic temperature. N

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Biological Sciences Section

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STUDIES ON *ASPERGILLUS* AND *CLADOSPORIUM* SPECIES INFECTING STORED CEREALS

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(Received July 7, 1991; revised September 3, 1992)

Some aspects of the cultural behaviour of *Aspergillus terreus* and *Cladosporium cladosporioides* were studied. Glucose (4 and 8%) and potassium nitrate (0.05 and 1.0%) were best suited for germ tube elongation. In an agar plate assay, secretion of pectate lyase and RNase was much greater than other polysaccharases. NaCl was detrimental to growth and sporulation of *A. terreus* and *C. cladosporioides*; both the species exhibited better growth in a mineral salts medium (MSM) over an *Aspergillus* medium (AM).

Key words: *Aspergillus terreus*, *Cladosporium cladosporioides*, Cereals enzyme.

PRELIMINARY OBSERVATIONS ON MORPHOLOGY AND EMBRYOGENESIS OF *RHABDITIS KARACHIENSIS* N. SP. FROM PAKISTAN

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(Received March 11, 1991; revised April 14, 1992)

Cultures of *Rhabditis karachiensis* n. sp. were prepared on potato dextrose agar from wild population of this nematode taken from marine algae (*Sargassum* spp.) in the laboratory. After successful culturing, single male and female were inoculated in sterilized (PDA) plates and left at room temperature ($28 \pm 5^\circ$). After three weeks population of these nematodes was increased. Embryological studies were made under compound microscope.

Rhabditis karachiensis n. sp. completed its embryonic development in about 19.66 hr. and deposited 8-10 eggs in 1 hr. Usually the early cleavage division occurred within uterus. Development of the embryo was fast and to some aspects similar to *Pelodera teres*. Lima bean stage was reached within 6.33 - 9.50 hr., from P stage. Comma stage followed by Tadpole stage within 8.33 - 12.16 hr. Plum stage transformed into first larval stage within 9.66 - 13.66 hr. from P stage.

Key words: *Rhabditis karachiensis* n. sp., Morphology, Egg, Female gonad, Embryogenesis.

NEMATODES ASSOCIATED WITH COCONUT NURSERIES IN KARACHI AND ADJOINING AREAS. *Part-I*

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(Received May 31, 1992; revised September 29, 1992)

A comprehensive survey of coconut growing areas in and around Karachi revealed the presence of large populations of these nematodes. *Helicotylenchus multicinctus*, *H. martini*, *Hoplolaimus indicus*, *Pratylenchus penetrans*, *P. zaei*, *Tylenchorhynchus maximus*, *Hemicriconemoides strictathecatus*, and *Xiphinema americanum*. Coconut seedlings were treated with 1% Tenckil for the establishment of nematode free nursery.

Key words: Nematodes, Coconut, Control.

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STUDIES ON THE SEED MYCOFLORA OF LENTIL AND ITS CONTROL

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(Received April 2, 1991; revised September 29, 1992)

Using the blotter technique 21 fungal species of fungi were isolated from 4 cultivars of lentil, of these 8 species are pathogenic on various crops. *Fusarium moniliforme*, *F. oxysporum*, *F. semitectum* were recorded in abundance. Treatments of seeds with 80 ppm neem bitter yielded significant control of seedborne mycoflora.

Key words: Lentil, Seed mycoflora, Control, Neem bitter.

BACTERIOLOGICAL STATUS OF DRINKING WATER IN RURAL AREAS OF PESHAWAR

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(Received December 31, 1990; revised September 24, 1992)

A study was carried out on the occurrence and distribution of different types of bacteria present in the drinking water of 12 villages near Peshawar from different sources i.e. well, tube-well, canal and river. 120 samples were analysed and the different types of pathogenic bacteria detected were of the type *E.coli*, *Salmonella*, *Shigella* and *Streptococcus*. The most prevalent was the coliform bacteria. A lot of variation was observed in the total bacterial count present in the various sources. Except a few samples almost all the samples had a total bacterial count as well as total faecal coli-form MPN beyond the standard values.

Key words: Bacteriology, Drinking water, Rural areas.

Short Communication

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**Triterpene Constituents from the Flowers of
Inula grantioides Boiss.**

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Inula is one of the genera belonging to the cosmopolitan

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Coprophilous Fungi of Pakistan

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(Received October 1, 1991; revised September 12, 1992)

Sixteen species belonging to eleven genera of Hyphomy-

Short Communication

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**Studies on Some Algae of Drinking Water Supplies
of Karachi City (Residential Area)**

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(Received December 11, 1991; revised September 9, 1992)

Short Communication

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Utilization of Mango Waste in Poultry Feed

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Technology Section

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PARTICLE SIZE OF DISPERSE DYES BY PARTITION CO-EFFICIENT MEASUREMENT

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(Received October 31, 1991; revised September 9, 1992)

Disperse Red 1 and disperse Orange 25 were prepared and their IR spectra were recorded. The partition ratio in aqueous suspension of water and chloroform for these dyes was determined at various milling time intervals. A gradual increase in (water/ CHCl_3) ratio indicated the progress of particle size reduction. The quality of dispersion was further confirmed by dyeing cellulose acetate fabric with these dyes as they gave uniform dyeing with good build up and no specks on the dyed fabrics were observed.

Key words: Disperse dyes. Dispersion and particle size.

PRELIMINARY STUDIES ON THE DEVELOPMENT OF BOROSILICATE GLASSES IN PAKISTAN

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(Received January 10, 1991; revised August 18, 1992)

Four borosilicate glass compositions containing B_2O_3 2.5–6.5% have been melted on laboratory as well as on pilot plant scale. It was observed that glasses containing B_2O_3 upto 5% were almost free of cords and seeds. With the exception of borax and boric acid, indigenous raw materials were used in these investigations. Thermal expansion co-efficients of these glasses varied between $70-60 \times 10^{-7}$ per $^{\circ}C$ (20 - $300^{\circ}C$). Laboratory articles such as beakers, flasks, funnels, petridishes etc. have been fabricated and tested. Glass No. 3 containing 5.0% B_2O_3 has been found reasonably good to be used in schools and colleges.

Key words: Glass, Borosilicate, Technical glass.

Introduction

A few laboratory meltings were made in clay-grog

THE RELATIONSHIP BETWEEN THE INTERFACIAL TENSION AND COMPRESSION OF VARIOUS FINISHED FABRICS

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(Received July 22, 1992; revised September 29, 1992)

Following brief review on softener and fabric softness, a softener parameter is described which is found to be related with fabric softness measured by fabric compression.

Key words: Softeners, Surfactance, Interfacial tension.