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Physical Sciences

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PLANT GROWTH STIMULATION OF LIGNITE HUMIC ACIDS. *PART-III*: EFFECT OF AMMONIUM HUMATE ON SEED COTTON YIELD AND FIBER QUALITY

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Effects of various concentrations of humic acids (as ammonium humate) ranging from 0.05 to 1.0 kg ha⁻¹ on the cultivation of cotton at the slit loam soil without using any chemical fertilizer were accomplished. Results showed significant effects of humic acids on seed cotton yield, boll weight, seed/boll, bolls/plant and lint (%). Maximum yield of cotton was recorded at a dose of 1.0 kg ha⁻¹ humic acids. The soil of Karachi already contains enough amount of phosphorous fertilizer for cotton cultivation. Encouraging effects of humic acids on fiber quality related parameters were also noted.

Key words: Humic acid, Ammonium humate, Fiber quality.

QUANTITATIVE ASSESSMENT OF NITROGEN AND PHOSPHORUS CONTENTS IN HYDERABAD CITY SEWAGE AND FULELI CANAL WATER

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Fulleli canal takes off from left bank of river Indus at Kotri barrage and passes through Hyderabad city, where untreated and partially treated city sewage is added. Five samples from sewage and seven samples along Fulleli canal were collected for three years at an interval of 4 to 6 weeks. These samples were analysed for nitrogen (organic, ammonia, nitrite, nitrate) and phosphorous (ortho, condensed and total phosphate). The variation in the concentration of total nitrogen ranged from 22.6 to 99.2 mg L⁻¹ and 4.4 to 42.8 mg L⁻¹ and phosphorous ranged 2.6 to 44.1 mg L⁻¹ and 0.041 to 15.94 mg L⁻¹ in sewage and along Fulleli canal respectively. The amount of nitrogen and phosphorous added to Fulleli canal from sewage water were calculated to 316.2 and 85.3 tons/month.

Key words: Fulleli canal, Nitrogen, Phosphorous, City sewage.

SEPARATION OF MIXTURE OF *m*-CRESOL AND *P*-CRESOL BY DISSOCIATION EXTRACTION

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(Received 18 November 2000; accepted 14 July 2001)

The separation of closely boiling organic acid is discussed using dissociation extraction techniques. A mathematical model is developed to calculate the separation factor in dissociation extraction process showing good agreement with experimental data. Important system variables are the concentration of the solutes, ratios of solutes in the organic phase and the solvent used. Experimental data is presented to show the affect of these parameters on the extraction of cresols.

Key words: Dissociation extraction, Cresol separation, Organic solvents.

INTERATOMIC POTENTIALS AND THE DIPOLE MOMENT OF THE CADMIUM FORBIDDEN ($5^3P_2 \rightarrow 5^1S_0$) TRANSITION FOR THE Cd_2 SYSTEM

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(Received 28 April 2000; accepted 29 July 2001)

The molecular band appearing at $\Delta V = 770 \text{ cm}^{-1}$ on the blue wing of the intercombination Cd (326.1 nm) line broadened by Cd pressure has been investigated. This band was interpreted as a rainbow satellite accompanying the dipole-forbidden Cd (314.1 nm) line associated with the $5^3P_2 \rightarrow 5^1S_0$ transition. The profile of this band has been calculated using the semiclassical model developed by Szudy and Baylis. To obtain this profile the interatomic potential of the molecular state 1_u and the dipole moment associated with this band have been modified to give the best fit profile with the experimental one.

Key words: Interatomic potentials, Dipole moment, Cadmium.

STUDY ON WASTE WATERS OF METAL FINISHING INDUSTRIES AROUND LAHORE METROPOLITAN AREA

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(Received 18 December 2000; accepted 8 September 2001)

Study was undertaken on the wastewater samples from metal finishing industries of Lahore metropolitan area for the evaluation of metallic impurities. The metal finishing industry was classified into three categories i.e. medium scale, small scale and cottage scale industry. About 93 wastewater samples were collected from various metal finishing industries around Lahore metropolitan area. In addition to toxic elements like cadmium, nickel and zinc the other parameters such as hydrogen ion concentration (pH), Electrical Conductivity (EC) and Total Dissolved Salts (TDS) were also determined.

Key words: Hazardous industrial waste, Pollution, Cation, Anion, TDS, EC, pH and Toxic metals.

Short Communication

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THE DISSOLUTION KINETICS OF SINGLE SUPERPHOSPHATE FERTILIZER

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Short Communication

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SYNTHESIS OF 3,5,7,3'-TETRAMETHOXY -4'-HYDROXY-8-C-PRENYLFLAVONE

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Short Communication

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**KINETIC STUDY OF REDUCTION OF
BIS(PENTANE-2,4-DIONATO) DIAQUO
MANGANESE (III) COMPLEX WITH
SODIUM THIOSULPHATE**

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Biological Sciences

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EVALUATION OF SHORT TERM TOXICITIES INDUCED BY GINGER OLEORESIN

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Ginger Oleoresin exhibited a marked action on central nervous system. The oleoresin was found to be non lethal upto a dose of 3.0g kg^{-1} , while a dose above that resulted in mortalities. The LD₅₀ was found to be 6.284 g kg^{-1} . The signs and symptoms observed in non lethal doses were solely functional and short lived. The magnitude and intensities of signs and symptoms exhibited were found to be dose dependant, while lethal doses imparted pharmacological and toxicological action by affecting the physiological mechanism of the body. Death occurred may be due to the direct action on central nervous system resulting in respiratory failure as well as circulatory arrest.

Key words: Ginger, Oleoresin, Toxicity, Therapeutic dose.

FURTHER OBSERVATIONS ON METACESTODIOSIS IN BLACK BENGAL GOAT IN BANGLADESH

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(Received 19 October 2000; accepted 29 May 2001)

Examination of 430 slaughtered Black Bengal goats, 198 male and 232 female, between 1 to 2.5 years of age, revealed 210 (48.84%) *Cysticercus tenuicollis*, 31 (7.21%) *Coenurus cerebralis* and 5 (1.16%) mixed infection with *C. tenuicollis* and *C. cerebralis*, while none of the goats had hydatid infection. The rate of infection was significantly ($p < 0.05$) higher in female goats than in males. *C. tenuicollis* cysts were recovered from the peritoneum and mesentery. In case of cerebral coenurosis the *C. cerebralis* cysts were found in the right and left cerebral haemispheres and median fissure of the brain. Besides from brain, coenurus cysts were also isolated from the diaphragm, subcutaneous tissues, the muscles of the abdomen, intercostal, thigh and neck muscles. No marked pathological changes was observed due to *C. tenuicollis*. In case of cerebral coenurosis skull bone was thin and soft. Marked tissue reaction was observed in the muscular tissues infected with coenurus cysts. There was haemorrhages, necrosis and granulomatous reactions.

Key words : Metacestodiosis, Black Bengal goat, Prevalence, Pathology.

HYPOCHOLESTEROLAEMIC EFFECT OF LEAF PROTEIN CONCENTRATE (LPC) ON BLOOD CHOLESTEROL OF RATS AND POULTRY

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(Received 2 August 2000; accepted 26 June 2001)

Leaf protein concentrate (LPC) was extracted from barseem leaves and incorporated in the diet replacing casein in case of rats and fishmeal in poultry. A series of experiments were conducted on rats and poultry to determine the hypocholesterolaemic effect of LPC on the blood cholesterol of rats and poultry. Results indicated that incorporation of LPC decreased cholesterol level of blood in rats and poultry. Decrease in phospholipids has also been noticed with the increase in concentration of LPC. Decrease in cholesterol content in eggs laid by hens fed on diet containing LPC has also been observed.

Key words: Leaf protein concentrate, Hypocholesterolaemic, Rats, Poultry.

PHYTOCHEMICAL AND ANTIMICROBIAL SCREENING OF THE LEAF AND ROOT BARK EXTRACTS OF *CALOTROPIS PROCERA* (AIT)

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(Received 27 May 2000; accepted 30 June 2001)

The antimicrobial activity of the cold methanolic extracts of the leaf and root bark of *Calotropis procera* (Ait), (Fam: Asclepiadaceae) was determined using the agar diffusion method. *Staphylococcus aureus*, *Escherichia coli*, *Candida albicans*, *Pseudomonas aeruginosa*, *Klebsiella aerogenes* and *Enterobacter aerogenes* were used as test organisms. Antimicrobial activity was observed with the leaf extract on four of the organisms tested, while the root bark showed activity on only two of the test organisms. The minimum inhibitory concentration (MIC) for the positively tested organisms lie within the range of 10-50 mg ml⁻¹. Phytochemical analysis conducted on the samples revealed the presence of saponins, glycosides, and simple sugars in the leaves, while the root bark was found to contain tannins in addition to these groups. Fractionation of the crude extract by solvent-solvent extraction procedure indicated that the organic acidic and organic basic fractions were more active. Infra-red (IR) spectroscopy of the two fractions indicated the presence of carboxylic acids and carbonyl groups. The findings of this study conforms with the local use of the plant.

Key words: *Calotropis procera*, Antimicrobial activity, Phytochemical analysis.

MICROBIAL CONTAMINATION OF PHARMACEUTICAL PRODUCTS IN A TROPICAL ENVIRONMENT

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Tablets, both coated and non-coated were examined for the microbiological contamination, growth and survival. Bacteria such as *Klebsiella aerogenes*, *Bacillus cereus*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus* were dominated in all the samples screened. Fungi isolated were *Penicillium chrysogenum*, *Aspergillus flavus* and some yeasts as *Candida albicans* and *Saccharomyces spp.* Total bacterial counts ranged from 2.0×10^3 to 8×10^7 colony forming units (CFU) per millilitre while mould units ranged from 0.2×10^2 to 1.4×10^2 cfu/ml. The bacterial isolates were further found to be able to grow and utilize the drugs (tablets) as sole carbon and energy sources.

Key words: Tablets, Microbial contamination, Pharmaceuticals.

EFFECTS OF MAGNESIUM FERTILIZATION ON RICE YIELD, MAGNESIUM AND POTASSIUM UPTAKE BY RICE AT VARIABLE APPLIED POTASSIUM LEVELS

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(Received 7 May 2001; accepted 30 October 2001)

A greenhouse experiment was conducted at University Putra Malaysia to evaluate the effects of magnesium (Mg) fertilization on rice yield, Mg and potassium (K) uptake by rice at variable applied potassium levels. Two soils (Guar and Hutan series), three Mg rates (0, 10 and 20 kg Mg ha⁻¹) and three K rates (0, 20 and 40 kg K₂O ha⁻¹) were used in the study. Grain and straw yields, total Mg and total K uptakes were significantly higher in Guar series compared to Hutan series. Potassium effect was not significant on any of the parameters. Magnesium fertilization increased grain and straw yields, Mg and K uptakes significantly in both the soils. Regression analysis indicated that estimated grain and straw yield responses to added Mg were linear in nature in Guar series while these were quadratic in nature in Hutan series. Similar trends were found for total Mg and K uptakes. The findings of this study indicate that Mg fertilization should be done in Mg deficient soils to increase rice yield.

Key words: Magnesium, Rice, Potassium.

MOISTURE DETERMINATION OF AGRICULTURAL CROP (*CAPSICUM ANNUM*) BY MICROWAVE ENERGY

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(Received 5 January 1999; accepted 7 May 2002)

The dipole rotation and ionic polarisation mechanisms that govern microwave heating were examined in relation to determination of moisture content in visco-elastic material. Samples of pepper were dried by heating in a microwave oven for time duration 5,10,20 and 30 min at different microwave power 350W, 500W and 650W respectively. The moisture content of the samples was determined for specific time and microwave power. The results were compared with standard measurement. Moisture content measurement accuracy in the microwave oven was affected by drying time and microwave power.

Key words: Microwave, Dipole rotation, Radiation, Moisture.

Short Communication

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ANTI-INFLAMMATORY ACTIVITY OF *SOLANUM NIGRUM* AND *SOLANUM TUBEROSUM* IN ALBINO RATS.

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Technology

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SOEPP-SUBROUTINE ORIENTED ENVIRONMENT IN PARALLEL PROGRAMMING

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(Received 1 October 1997; accepted 20 August 2001)

Generally, the software for real time parallel processing comprises of system software and the application software. The system software, in turn, comprises a run time executive and a parallel compiler for high-level language interface. This paper presents a novel approach to the design of run time support software and a parallel compiler to facilitate the user with a Subroutine Oriented Environment in Parallel Programming. Using this environment, the user is able to upgrade the parallel processor system for more power and bandwidth by adding more processor boards in the system architecture without modifying or recompiling the system or the applications software.

Key words: Shared memory, Parallel programming, Multi processor system.

Technology

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Key words: Shared memory, Parallel programming, Multi processor system.