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Physical Sciences Section

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SYNTHESIS AND ANTIMICROBIAL ACTIVITY OF SOME NEW 3,5-DISUBSTITUTED PYRAZOLINES CONTAINING 1,2,4-TRIAZINE MOIETY

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Several new 3,5-disubstituted pyrazolines containing 5,6-diphenyl-1,2,4- triazin-3-yl moiety were prepared by condensation of 3-hydrazino-5,6-diphenyl- 1,2,4-triazine with benzoyl acetanilide derivatives, chalcons, ethyl cyanoacetate/acetic anhydride. These compounds were characterized by IR, PMR and UV spectral studies and also tested for their antimicrobial activity. Promising results were obtained which have been discussed.

Key words: Substituted pyrazoles, 1,2,4-Triazine, Antimicrobial.

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ACTIVATED CARBON FROM INDIGENOUS INFERIOR WOODS

Part -IV. Adsorption of Copper, Zinc and Hexavalent Chromium-optimum Contact Time and Adsorption Behaviour

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The effect of contact time, amount of carbon and general adsorption behaviour of copper, zinc and hexavalent chromium has been determined from their aqueous solutions by an activated carbon prepared from Eucalyptus (*E. camaldulensis*). It has been found that in each case, amount of carbon has no significant effect on the optimum contact time required for maximum metal adsorption. However, carbon dose significantly affects the amount of metal adsorbed. The adsorption of copper is found to be thrice that of zinc and chromium on the basis of initial metal ion concentration using the same amount of carbon. The results further show that when two or three metals are in the same solution, they compete for adsorption sites. However, the adsorption of zinc is hindered and reduced by 50% in the presence of Cu and Cr^{+6}.

Key words: Copper, Zinc, Hexavalent chromium, Activated carbon, Eucalyptus, Adsorption.

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COMPLEXES OF Mn (II), Zn (II), Hg (II) AND Fe (III) WITH N, N'-BIS (R-PHENYL) ETHANEDIIMINE

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(Received February 7, 1991; revised January 13, 1992)

The synthesis and characterisation of complexes of N, N-Bis (R-phenyl) ethanediimine Schiff bases (R=*o*-OH L_1,=*p*-OH L_2,=*p*-OCH_3 L_3 with Mn (II), Zn (II), Hg (II) and Fe (III) have been described. Characterisation of the complexes has been accomplished primarily by elemental analysis, molar conductance as well as electronic and infrared spectral measurements. Formation, stoichiometry and stability of the complexes have been tested in solution using electronic spectral measurements. It is concluded that the ligands (L_1-L_3) are coordinated to the metal ions as bidenatate NN ligands. The complexes are suggested to exhibit a distorted octahedral geometry.

Key words. Complexes, Schiffbases, Transition metals, Ethanediimine derivatives.

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THE PREPARATION AND *IN VITRO* EVALUATION OF ANTACID PROPERTIES OF SACCHARATED MAGNESIUM HYDROXIDE

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(Received December 31, 1990; revised January 5, 1992)

The preparation and *in vitro* antacid properties of polynuclear Mg-hydroxide chelate of sucrose (Sacch-Mg) have been studied. Its properties have been compared with those of a commercially available preparation containing Mg-hydroxide in suspension. 12.562 gm of Sacch-Mg contained 1 gm of elemental Mg. The neutralizing capacity of Sacch-Mg revealed that 1 gm of elemental Mg can neutralize 75.438 mEq. HCl. In respect of efficacy of the dose, duration of activity and maximum pH, it was observed that 0.0398 gm of elemental Mg can neutralize 50 ml of 0.1 NHCl to pH 1.80 in 15 mins, on successive addition of another 0.0398 gm of elemental Mg pH was raised to 3.7 and on addition of another 0.0398 gm elemental Mg pH was raised to 5.05. Buffering capacity showed that 2.2 ml of mEq. HCl was required to lower the pH of 0.0796 gm elemental Mg from 4 to 3.

Key words: Antacid properties, Saccharated Mg-hydroxide.

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SYNTHESIS AND REACTIONS OF PHTHALOYL ACETOPHENONE AND THE BIOLOGICAL ACTIVITY OF SOME NEW COMPOUNDS

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(Received May 3, 1991; revised December 28, 1991)

Phthaloyl acetophenone 1 was prepared via Claisen condensation of diethyl phthalate with acetophenone. The behaviour of compound 1 towards hydrazines, diazonium salts and carbazides to give phthalazine derivatives 2,3 and 4, hydrazidoyl derivatives 5 and dipyrazole derivatives 6,7 and 8 respectively. The antimicrobial activity of some new compounds has been screened.

Key words: Synthesis, Biological activity, Compounds.

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SEWAGE FAT RECOVERY AND CHARACTERIZATION

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(Received March 3, 1990; revised January 18, 1992)

Experiments were conducted for the extraction of fatty matter from dried primary sludge and protein free primary sludge, using naphta as solvent which is available locally as refinery surplus and is comparatively cheaper. On the average, the percentage recovery of fats from primary sludge and protein free primary sludge were almost identical and thus it was established that the protein separation does not effect the recovery of fat. With a view to characterize the extracted fat, in either case, parameters such as iodine value, saponification value, I.N.S. factor, F.F.A. (%) and acid value were determined. Further the comparison of the experimental values of the parameters with those of standard fatty material reveal that there are fair indications that the extracted fat can be put to profitable use.

Key words: Fat extraction, Fat characterization, Sewage sludge.

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AIR POLLUTION INJURY IN RICE PLANTS UNDER KINETIN AND ASCORBIC ACID SPRAY

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(Received June 27, 1991; revised January 20, 1992)

Oryza sativa L. cv. GR 3 was grown near to a fertilizer plant which emits SO_2, NH_3, NO_2 and F as major air pollutants. Attempts to obviate air pollution injury by foliar application of kinetin and ascorbic acid at the age of 45-51 days has minimised the foliar injury thereby improving the photosynthetic leaf area. Accumulation of fresh and dry matter of culm was not affected by air pollution under the chemical protectants. However, plant height and panicles length were not improved. All the polluted plants produced an increased number of panicles under the kinetin and ascorbic acid spray with high total dry standing crop. Unfavourable climatic factors during the investigation acted as additional stress to Hamper the productivity.

Key words: Kinetin, Ascorbic Acid, Rice, Air pollution.

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(concentrations were selected by trial experiments at seedling

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INFLUENCE OF CULTIVAR, SOWING DEPTH AND SEED SIZE ON THE EMERGENCE OF GROUNDNUT

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(Received April 29, 1991; revised January 12, 1992)

A study was conducted to determine the influence of cultivar, sowing depth and seed size on the emergence of groundnut in controlled environment. The study comprised of four cultivars, *viz.* Kadiri-3, Kadiri 71-1, Gangapuri and TMV-2; four sowing depths, *viz.* 2,4,6 and 8 cm; and three seed sizes, *viz.* large, medium and small. Seeded pots were irrigated as and when necessary for normal plant growth. Results indicated that emergence percentage was significantly influenced by cultivars. Gangapuri had the greatest emergence followed by TMV-2. Although insignificant, emergence percentage was reduced with the increase of sowing depth. Seed size had no significant influence on emergence, but a slightly higher emergence was observed in large seeds. Despite insignificant cultivar differences, TMV-2 emerged faster than all other cultivars. The fastest emergence was recorded at 2 cm sowing depth and then decreased with increasing depths. Small seeds emerged significantly faster than large seeds. None of the interactions between cultivar, sowing depth and seed size was significant. However, a faster emergence was observed for small seeds at all sowing depths.

Key words: Groundnut, Cultivar, Sowing depth, Seed size.

Introduction

sowing [4,5]. Varietal response to seed size and sowing depth

Short Communication

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Preliminary Observations on the Use of Biogas Effluents for Common Carp (*Cyprinus carpio*-L.) Culture

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The potential of recycling animal wastes into fish pro-

Short Communication

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Report on the Occurrence of Parthenogenetic Brine Shrimp in Solar Salt Works of Karachi Coast (Pakistan)

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Technology Section

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A STUDY OF MINERALOGY AND PHYSICO-CHEMICAL PROPERTIES OF SWAT CLAY REJECT (FINE SLIP)

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(Received April 29, 1989)

Mineralogy, chemical and physical investigations of "Fine slip" - a by-product of Swat clay reject, have been carried out in order to evaluate and find out the areas of its utilization. The results indicate that it can be utilized in the manufacture of pressed ceramic wares and tiles in particular.

Key words: Fine slip, Plagioclasefeldspars, Deflocculation.

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EFFECT OF UREA TREATMENT AND POST-TREATMENT STORAGE ON DIGESTIBILITY OF WHEAT STRAW

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(Received May 21, 1990; revised January 22, 1992)

Chopped wheat straw was treated with simple water or aqueous solution of urea at various concentrations to keep the urea level at 1, 2, 3, 4, 5 or 6% of the wheat straw and a moisture level of 50% in all the straw samples. Each of these samples was stored anaerobically for a period of 2, 4 or 6 weeks at room temperature. Nylon bag digestibility was determined for dry matter (DM), organic matter (OM) and crude fibre (CF). Urea treatment of the straw beyond 3% level improved ($P<0.05$) by increases in the time during which the treated straw could be stored without spoiling. The improvement in CF digestibility of the straw was associated more with the urea treatment than with the storage time.

Key words: Urea, Wheat straw, Digestibility.

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STUDIES ON THE CONTROL OF SOIL-INHABITING PESTS ATTACKING SUGARCANE PLANTS BY TENEKIL IN COMPARISON WITH STANDARD PESTICIDES

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(Received July 11, 1991; revised January 31, 1992)

Plant pathogenic nematodes and subterranean termites severely damage sugarcane plants (*Saccharum* Spp.) in Sindh region of Pakistan resulting in a tremendous decline in yield of ripe crops. An indigenous pesticide Tenekil (Polychlorinated hydrocarbon), developed and formulated at PCSIR Laboratories, which has been successfully applied for the control of nematodes and termites both at the same time in comparison with Chlordane and Dieldrin. Sugarcane plants treated with 2.5% Tenekil at sowing stage and its further application after three months were found to be effective against nematodes and subterranean termites for a period of 10 months, till harvesting of ripe crops, resulted two fold increase in yield significantly. Whereas on comparison, sugarcane plants treated with 2.5% chlordane and 2.5% dieldrin seperately with the same technique, remained unattacked by termites for 10 months. On the other hand heavy infestation of nematodes was noticed after six months causing poor plant growth and a remarkable decline in yield.

Key words: Nematodes, Termites, Sugarcane, Tenekil.