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Physical Sciences

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REAGENTS FOR NEW HETEROANNELATION REACTIONS: AZA REAGENTS

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Aza reagents were prepared from different hydrazides. Reactions of *ortho*-aminoesters and *ortho*-aminonitriles with aza reagents have been studied in different solvents. Aza reagents with *ortho*-aminoesters and *ortho*-aminonitriles in presence of *p*-toluene sulphonic acid in dry CH_3CN or acetic acid furnished the tricyclic derivatives *N*-[2-(methylthio)-4-oxo-5, 6, 7, 8-tetrahydro [1]benzothieno [2, 3-d]pyrimidine-3 (4H)-yl]carbamic acid ethyl ester (8), 5, 6, 7, 8-tetrahydro-2-methylthio-4-oxo [1] benzothieno [2, 3-d]pyrimidin-3 (4H) acetamide (9) and 5, 6, 7, 8-tetrahydro-2-methylthio-4-oxo [1] benzothieno [2, 3-d]pyrimidine-3 (4H)-benzamide (10), whereas, in pyridine medium these reactions afforded uncyclized urethane products (11, 12 and 13).

Key words: Aza reagents, Heteroannellation, Hydrazides.

URINARY EXCRETION OF CHLOROQUINE AND ITS METABOLITES

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The amount of individual metabolites of chloroquine present in the urine of Wistar Albino rats was determined. The desethylchloroquine and the 4 - amino - 7 - chloroquinoline were identified in this study similar to those obtained in man by previous investigations. The results of the investigation suggest that rat metabolises chloroquine in a similar way as man.

Key words: Chloroquine and its metabolites, Urinary excretion, Albino rats.

SYNTHESIS AND CHEMICAL REACTIVITY OF NOVEL FUNCTIONALLY SUBSTITUTED-5,6-DIPHENYL-1,2,4-TRIAZINES

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An improved synthesis of some new fully substituted-5,6-diphenyl-1,2,4-triazines starting from 4H-2-cyanomethyl/aryl-5,6-diphenyl-1,3,4-oxadiazines (3a-d) has been reported. The structures were determined through elemental analysis and spectral data. The mass spectra of the synthesized compounds were also studied. Some of these compounds exhibited significant antimicrobial activity.

Key words: Synthesis, Fully substituted-1,2,4-triazines, Elemental analysis, Triazines.

SYNTHESIS AND ANTIMICROBIAL ACTIVITIES OF SOME NEW FULLY SUBSTITUTED 1,2,4-TRIAZINES

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A facile synthesis of fully substituted 1,2,4-triazines (**3a-3c**) involving the reaction of benzoinhydrazone **1** with isothiocyanates followed by alkylation, hydroxymethylation, aminolysis and hydrazinolysis has been described. The structure of the products has been deduced from their elemental analysis and spectral data (UV, IR, ¹H-NMR and mass spectra). Antimicrobial screening of some products revealed that only the compound **6** showed marked activity towards *Streptomyces*.

Key words: Benzoinhydrazide alkylation, 1,2,4-Triazines, Antimicrobial activity.

EVALUATION OF SHALLOW GROUNDWATER QUALITY IN URBAN AREAS OF KARACHI (PAKISTAN)-INORGANIC NUTRIENTS AND BACTERIAL CONTAMINATION

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A total of 193 groundwater samples, collected from Karachi-urban areas, were analysed to determine the concentrations of nitrate, nitrite, ammonia and bacterial densities (coliform and faecal coliform bacteria). From nitrogen component view point groundwater quality of Karachi is acceptable for human consumption. However, coliform bacteria were higher in 83% samples than the WHO permissible limit. The inorganic nitrogen and bacteriological contamination levels suggest that the groundwater quality is mainly affected by wastewater.

Key words: Groundwater contamination, Inorganic nutrient, Faecal coliform

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STUDY OF PHYSICO-CHEMICAL PARAMETERS OF AN ARTIFICIAL LAKE OF SINDH

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EFFECT OF SOME PHYSIOLOGICAL AND BIOCHEMICAL ASPECTS ON ACETONE BUTANOL PRODUCTION BY *CLOSTRIDIUM ACETOBUTYLICUM*

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(Received 15 June 1999; accepted 19 January 2000)

The effect of some fermentation conditions as well as the role of some additives on the production of acetone-butanol by a local strain of *C. acetobutylicum* were studied. Maximum solvent yield was obtained at pH 5.5, after 4 days incubation, using 10 ml inoculum, 43.25×10^8 cells and 24 h old culture. Addition of acetic acid and butyric acid separately and in mixture increased the solvent productivity by 10.4, 9.4 and 11.6%, respectively. Propionic acid at concentration of 20m mol produced the highest yield of solvents. On the other hand butraldehyde at lower concentration had no effect and at higher concentrations decreased the solvent yield sharply.

Key words: Acetone-butanol production, *C. acetobutylicum*, Additives.

Short Communication

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INDOLE DERIVATIVES AS ANTIBACTERIAL AGENTS. STRUCTURE-ACTIVITY RELATIONSHIP

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Biological Sciences

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AQUATIC FUNGI IN POLLUTED MARINE WATER AND THEIR RELATIONSHIP WITH DRIED FISH

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(Received 4 November 1997; accepted 14 December 1999)

The fungal flora of the polluted water and mud samples of Pasni and Ormara coasts were investigated using baiting and plating techniques. Most of the isolated fungi were the members of Mastigomycotina, Zygomycotina and Deuteromycotina. Fungi isolated from dried fish were the same as isolated from mud and water samples. *Saprolegnia parasitica*, *S. declina* and an unidentified lower fungi recorded exclusively from dried fish samples.

Key words: Aquatic fungi, Marine pollution, Marine fish.

COMPARISON BETWEEN TWO DETECTION TECHNIQUES OF SEED-BORNE PATHOGENS IN CUCURBITS IN BANGLADESH

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(Received 11 February 1996; accepted 22 January 2000)

Fifty four seed samples of three cucurbits namely sweet gourd (*Cucurbita moschata* Duch. Ex Poir.), white gourd (*Benincasa hispida* Cogn.) and bitter gourd (*Momordica charantia* L.) were collected from six different districts of Bangladesh, to find out a suitable detection technique of associated seed-borne fungi in laboratory conditions. Three different detection methods namely, dry inspection, blotter test and seedling symptom test were compared in present study. Among the tested three detection techniques, more infection rates were observed for *Aspergillus flavus* and *Penicillium* in all cucurbit seeds in blotter test method, whereas higher infection caused by *Fusarium* and *Rhizopus* were recorded in test tube seedling symptom test. The higher germination percentage of cucurbit seeds was observed in blotter test and it is less expensive, quick and useful for the detection of most of the infectious fungi.

Key words: Seed-borne pathogens, Cucurbits, Detection techniques, Dry inspection, Blotter test

SEED-BORNE DISEASE PROBLEMS OF LEGUME CROPS IN PAKISTAN

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Twenty four seed-borne fungi belonging to different genera, were detected using blotter paper method, from 145 seed samples of major legume crops in Pakistan. Of these fungi, *Alternaria alternata*, *Ascochyta* spp., *Colletotrichum* spp., *Fusarium* spp. and *Macrophomina phaseolina* were the most frequent and known as common pathogenic fungi in these crops. Highest number of various types of mycoflora was detected in soybean (14), chickpea (13) followed by mungbean, pea and lentil seeds. Range of seed infection percentage varied in individual samples and crops. Seven fungi, *Aspergillus*, *Chaetomium*, *Cladosporium*, *Mucor*, *Penicillium*, *Trichoderma* spp. generally not considered field fungi in legume crops and are known to be involved in deterioration of seeds and production of *mycotoxins*, were also observed. It is needed that the test legume crop seeds may be tested for their health status before sowing and storage so as to produce healthy crops.

Key words: Seed-borne fungi, Legume crops, Pakistan.

ISOLATION AND IDENTIFICATION OF A FLAVONOL GLYCOSIDE USING HIGH SPEED COUNTER CURRENT CHROMATOGRAPHIC TECHNIQUE FROM THE LEAVES OF *SALVADORA PERSICA*

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(Received 9 March 1999, accepted 24 January 2000)

This paper introduces the results of separation of a crude flavonoid sample, separated and identified as Kaempferol 3- α -L-rhamnosyl-7- β -xylopyranoside **1** alongwith Quercetin and Kaempferol from the 10% EtOH extract of the leaves of *Salvadora persica* through centrifugal partition chromatography (Pharma-Tech CCC-1000 Instrument) using upper phase as mobile phase and solvent system CHCl_3 ; MeOH; EtOH; H_2O (5:3:3:4). Detection was carried out at 254nm with flow rate 3ml/min and a rotational speed 800rpm. Three flavonoid peaks were resolved and eluted out in 3.5 h. The results obtained with the present CCC method are substantially far better than those from the conventional Column chromatography in terms of peak resolution and separation time, furthermore, separations are much improved.

Key words: High speed Counter Current Chromatograph (HSCCC), *Salvadora persica*, Kaempferol 3-rhamnoside-7- β -xyloside.

PRODUCTION OF HAPLOID PLANTS IN CROSSES BETWEEN F_1 -GENERATION OF WHEAT WITH MAIZE

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Eight crosses in F_1 -generation of bread wheat were crossed with maize variety C-17. Fertilization frequency ranged from 10-21.9% of pollinated florets. A total of 50 embryos were recovered from 492 florets and 15 embryos germinated to have haploid seedlings.

Key words: Wheat, Maize, Haploid plants.

Technology Section

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GRAFTING OF POLYBUTYL ACRYLATE GROWING CHAINS TO GELATIN

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Modification of gelatin by grafting with butyl acrylate in the presence of potassium persulfate is accomplished and the results are discussed with respect to percent grafting, grafting efficiency and rate of grafting. The number and variety groups along the chain of gelatin act as grafting centres. Grafting efficiency is found to be the same at all monomeric gelatin ratio.

Keywords: Grafting, Polybutyl acrylate, Potassium persulfate, Gelatin.