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Physical Sciences Section

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METAL COMPLEXES OF (SALICYLALDEHYDE) (2-HYDROXY-ACETOPHENONE) ETHYLENEDIIMINE

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(Received June 10, 1990; revised June 27, 1991)

The 1:1 (metal:ligand) solid complexes of Mn^{2+}, Fe^{3+}, La^{3+}, Ce^{3+}, and UO_2^{2+} and 1:2 complexes of Mn^{2+} and Fe^{3+}, with the non-symmetrical tetradentate Schiff base (salicylaldehyde) (2-hydroxy acetophenone) ethylenediimine (SAE) have been synthesized and characterized on the basis of elemental analysis, infrared and electronic spectral data. Stoichiometry and stability of the complexes have been tested in solution using electronic spectra and conductometric measurements. It is concluded that the Schiff base acts as a bivalent ONNO tetradentate ligand. The proton dissociation constants of the ligand have been determined potentiometrically at an ionic strength of 0.1M $NaClO_4$.

Key words: Complex, Schiff bases, Diiminoderivatives.

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INVESTIGATION OF GAMMA-RAY ACTIVITY AND RADIOLOGICAL HAZARDS OF THE BRICKS FABRICATED AROUND LAHORE (PAKISTAN)

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(Received January 30, 1991; revised August 7, 1991)

Employing state of art measurement techniques and software, gamma-ray activity due to ^{224}Ra, ^{232}Th and ^{40}K have been measured from bricks fabricated around Lahore, Pakistan. External and internal hazards due to dose rate from radioactivity of bricks have been calculated for several samples and compared with already published work for Kasur, Pakistan.

Key words: Gamma-ray activity, Radiation hazard, Radium equivalent activity bricks.

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ESTERIFICATION OF 1-PROPANOL AND 1-BUTANOL WITH SOME ORGANIC ACIDS USING INORGANIC ION-EXCHANGE RESIN (ZIRCONIUM TUNGSTATE) AS A CATALYST

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(Received February 27, 1989; revised July 11, 1991)

Studies have been investigated on the esterification of 1-propanol and 1-butanol with different organic acids in presence of inorganic cation exchanger zirconium tungstate (H^+ -form). The influence of molecular weight, structure of acids and alcohols and temperature on the fractional conversion have been studied. The effect of metal-amine form of zirconium tungstate as a catalyst especialy in the esterification of propionic acid with methanol and ethanol separately have been investigated. It was found that the rate of esterification decreases with decreasing the exchange capacity of the resin depending on the metal-amine forms, whereas the activation energy of reaction increased. It was important found that the zirconium tungstate in H^+ -form a good catalyst for such esterification. In both cases the experimental data was found to fit a second order bimolecular kinetic equation. The rate constant (k_r) for seven acids have been calculated and found to bear a linear relationship with the reciprocal of temperature.

Key words: Esterification, Ion-exchange resin, Acid.

Introduction

Thermal treatment . The different forms of zirconium

Short Communication

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Behaviour of 2,2'-(1,4-Phenylene) Bis (4-Phenylmethylene) -5(4H)-Oxazolone Towards Carbon Nucleophiles under Friedel-crafts and Michael Reactions Conditions

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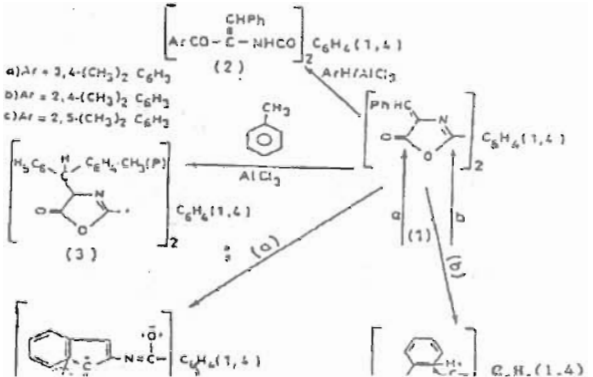

Biological Sciences Section

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FATTY ACIDS OF INDIGENOUS RESOURCES FOR POSSIBLE INDUSTRIAL APPLICATION

Part - XIX. Fatty Acid Composition of *Citrus grandis* and *Citrus reticulata* (Var. Sangtra)

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(Received October 23, 1990; revised July 24, 1991)

The yield of seed oils of *Citrus grandis* and *Citrus reticulata* (Var. Sangtra) was 38.73 and 31.62%t respectively and their refractive indices (1.4683, 1.4658), sp. gravities (0.9331, 0.8806) acid values (0.22, 0.17), iodine values (91.7 & 98.5) and saponification values (178.89, 196.8), were recorded. The GC analysis revealed the presence of $C_{10:0}$ (0 & 2.2%), $C_{12:0}$ (0.5 & 0.8%), $C_{14:0}$ (1.0 & 1.5 %), $C_{16:0}$ (18.7 & 15.0%), $C_{18:0}$ (4.6 & 3.7%), $C_{18:1}$ (28.2 & 26.3%), $C_{18:2}$ (42.2 & 42.8%) and $C_{18:3}$ (4.7 & 7.5%) respectively.

Key words: *Citrus grandis*, *Citrus reticulata* Var. Sangtra, Seed oil, Fatty acids composition.

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PERSISTENCE OF PERMETHRIN, PRIMIPHOS METHYL AND CHLORPYRIPHOS METHYL INSECTICIDES IN WHEAT STORED UNDER SIMULATED ENVIRONMENTAL CONDITIONS

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(Received January 4, 1991; revised July 8, 1991)

Procedures are described for determining the persistence of permethrin, primiphos methyl and chlorpyriphos methyl insecticides applied directly to wheat grains and stored at two moisture contents and at four different temperatures in the laboratory. This was done with a view to simulate different climatic zones of Pakistan. Samples of treated wheat were withdrawn from storage at regular intervals, ground to a coarse powder, extracted with suitable solvents, cleanedup and finally analyzed for residues by gas-liquid chromatography using thermionic specific and electron capture detectors. The decline in concentration of active ingredients of the three insecticides was maximum at 40° and 13% moisture content whereas it was minimum at 25° and 10% moisture content. Amongst the three products, permethrin was found to be the most persistent followed by primiphos methyl while chlorpyriphos methyl was the least persistent.

Key words: Wheat grains, Pesticide residues, Gas chromatography.

Short Communication

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Biological Activities in Seaweeds

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The therapeutic efficacy of biologically active com

Technology Section

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IN HOUSE SOLID PHASE T-3 RADIOIMMUNOASSAY

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(Received August 30, 1989; revised December 1, 1990)

In order to replace the use of expensive RIA kits/bulk reagents with local technology, work with production of T3-antibodies in rabbits and measurement of antibody titres was started. The avidity of antibody with maximum titre (1:7900, determined from scatchard plot was suitably high i.e., 0.7×10^{10} lit./ mole. Coupling of this antibody to activated cellulose was done to prepare solid phase binding agent. A solid phase radioimmunoassay was then developed. Analysis of bound counts versus standard concentrations showed that the data fits well in logit-log coordinate system ($p>0.5$), and sample results correlate linearly with those of commercial RIA kits and imported bulk reagents (NETRIA, U.K.). Observed sensitivity of assay (0.2 nmol/1) compares well with commercial assays. Initially obtained high imprecision at low doses was improved with experience replacement of tracer. Between batch analysis of quality control results shows that in house assay is as good in quality as the commercial ones.

Key words: Solid phase, Radioimmunoassay, In house.

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INFLUENCE OF COWDUNG COMPOST ON SURVIVAL AND GROWTH OF TILAPIA *(OREOCHROMIS MOSSAMBICUS)*

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(Received August 5, 1989; revised June 26, 1991)

Growth of *Oreochromis mossambicus* was determined over a period of 180 days in concrete ponds. Ponds in treatment group A were treated with cattle dung compost, treatment group B received compost plus a feed supplement, while control pond received neither compost nor supplementry feed. Analysis of covarience showed significant differences between the three treatments. In this study none of the values recorded for water chemistry was beyond the normal range of tolerence of fish. It is concluded that treating pond with bio waste can improve growth rates in tilapia culture and reduces runing costs.

Key words: Tilapia, Growth, Cowdung compost.

Introduction

pits were dug. In the pits green grass and cow dung were placed

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STUDIES ON THE PREPARATION OF MEAT SUBSTITUTE FROM SOYBEAN

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(Received January 29, 1990; revised June 3, 1991)

A vegetable base high protein product closely resembling minced meat in taste, texture and appearance was prepared from soybean. It contains 60% protein, 25% oil and 5% ash on dry wt. basis. Different acids have been used for the isolation of soy protein from soybean. The percentage yield and quality of the product was better when prepared by citric acid precipitation. Various flavourings, supplementary nutrients and edible colours were added to give it a taste and appearance similar to that of minced meat. NPU and PER values have been determined on rat feeding for 4 weeks which confirmed that the product is as nutritive as meat.

Key words: Soybean, Meat, Protein, Vegetable.