ISSN 0030 - 9885
Coden: PSIRAA 35 (11) 425–474 (1992)

PAKISTAN JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Vol. 35, No. 11, November 1992

Physical Sciences. Pages 425-450

Biological Sciences. Pages 451-462

Technology. Pages 463-474

Published monthly by

Scientific Information Centre
PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
KARACHI

Physical Sciences Section

Pak. j. sci. ind. res., vol. 35, no. 11, November 1992

KINETIC STUDIES ON THE DECOMPOSITION OF ILMENITE CONCENTRATE FROM SAND STONE FOR THE RECOVERY OF TITANIUM DIOXIDE

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(Received January 22, 1991; revised November 11, 1992)

Ilmenite concentrate from sand stone of D.G. Khan was selected for the recovery of titania. It was investigated that the maximum decomposition was done with a mixture of sulphuric acid and ammonium sulphate. Different factors, i.e. dilution, boiling time and pH were studied to effect hydrolysis. It was found that the maximum recovery was achieved at 3.5 times dilution for boiling 10 min. at pH less than 0.5 of the solution obtained after decomposition.

Key words: Ilmenite, Recovery, Titania

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TRIAZOLE-PYRAZOLE COMPOUNDS WITH POSSIBLE BIOLOGICAL ACTIVITY. *Part -II*

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(Received October 4, 1992)

Condensation of 4-formyl-2-aryl-1,2,3- triazoles with acetophenone derivatives afforded the chalcone (1) which react with different acyl- and arylhydrazines to give the corresponding hydrazones (2 and 3) or pyrazolines (4). Oxidation of (4) with bromine water yielded the pyrazole derivatives (5). Condensation of (4) and (5) with isothiocyanate gave the thioureas (6) and (7), which cyclized with ethyl bromoacetate to the corresponding thiazolidines (8) and (9).

Key words: Triazole, Chalcones, Pyrazoles.

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SOME NEW REACTIONS OF CINNAMOYLMORPHOLINE DERIVATIVES WITH AMINO ACIDS

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(Received June 29, 1991; revised November 5, 1992)

Cinnamoylmorpholine-4-sulfonylamino acids (2-13) and some of the corresponding methyl esters (14-18) were successively prepared. Hydrazinolysis of the methyl esters in methanol yielded the corresponding hydrazides (19-23). Coupling of amino acid derivatives (2-13) with amino acid methyl ester hydrochlorides in THF-Et_3N medium using the dicyclohexylcarbodiimide method afforded the desired dipeptide methyl esters (25-30). Some of the synthesized derivatives (2-30) were found to be active against a number of micro-organisms.

Key words: Reactions, Cinnamoylmorpholine derivatives, Amino acids.

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STATIC LIGHT SCATTERING MEASUREMENT OF NATURAL RUBBER IN TOLUENE

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(Received September 30, 1991; revised October 15, 1992)

Natural rubber used in local tyre industry was characterized by light scattering technique in toluene solvent and at room temperature (25°). The molecular weight, size and shape of the rubber was determined by Zimm plot, turbidity and dissymmetry methods. The refractive index increment showed decrease with increase in concentration thus showing more solvation in dilute solutions. The molecular weight obtained by two methods is comparable. It was also observed that natural rubber has random coil conformation in toluene and further tolune is acting as good solvent for natural rubber.

Key words: Static, Light scattering, Natural rubber, Toluene.

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GAS CHROMATOGRAPHY OF ORGANOPHOSPHORUS PESTICIDES IN SOILS BY INTERNAL STANDARD METHOD

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(Received June 17, 1991; revised November 14, 1992)

Two types of soils treated with seven organophosphorus pesticides were extracted separately with six solvent systems. The recovery yields from the soils were studied by gas chromatographic technique using an internal standard. The data were subjected to statistical analysis. The best solvent system for best recovery is reported.

Key words: Gas chromatography, Organophosphorus pesticides, Solvent systems.

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SPECTROPHOTOMETRIC DETERMINATION OF MITOMYCIN C USING IRON (III)-1, 10-PHENANTHROLINE REAGENT

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(Received April 13, 1992; revised November 3, 1992)

A simple, sensitive and accurate method has been developed for the determination of Mitomycin C (MMC) in pure form and in injections. The method is based on the oxidation of MMC with iron (III) in the presence of 1,10-phenanthroline (phen) in acid medium. The iron (II) formed is quantitatively and rapidly converted to the stable tris (1, 10-phenanthroline) iron (II) complex that absorbs at 510 nm. The optimum conditions for this reaction were ascertained and a spectrophotometric method was developed for the determination of MMC in the pH range 2.30-3.50. Sensitivity and precision of the method were calculated and the coefficient of variation is within the range of 0.50-0.67%.

Key words: Mitomycin C, Fe (III)-1,10-phenanthroline reagent, Spectrophotometric determination.

Biological Sciences Section

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INTERCROPPING OF CORIANDER AND LINSEED IN WHEAT

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(Received December 3, 1989; revised October 6, 1992)

A study was conducted during Oct. 1987 - Mar. 1988 to determine the productivity of wheat + coriander and wheat + linseed intercropping under uniform, paired and triple row planting patterns having row arrangements of 20 cm, 15-25 cm and 15-15 cm, respectively. The sole crops of wheat was grown in 20 cm apart rows, while that of coriander and linseed in 10 cm apart rows. Results revealed that intercropping did not exert significant effect on the grain yield of wheat but the seed yield of coriander and linseed were reduced by intercropping comparing their respective sole crops.

Key words: Wheat, Coriander, Linseed, Intercrop.

Introduction

phosphate and muriate of potash were applied to all the plots

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EPICUTICULAR WAX OF *EUPHORBIA CADUCIFOLIA* HAINES

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(Received July 28, 1992; revised November 11, 1992)

The stems of *Euphorbia caducifolia* contain epicuticular wax (0.66%) which comprises free fatty acids (2.4%), hydrocarbons (6.7%), wax esters (17.8%), aldehydes (31.1%), fatty alcohols (18.9%), friedelan-3 α-ol (4.4%), unidentified alcohols (6.2%) and resinous material (3.3%). The free and combined fatty acids range from lauric acid (C_{12}) to behenic acid (C_{22}). The hydrocarbons range from pentacosane (C_{25}) to pentatriacontane (C_{35}) with the highest percentage of nonacosane (C_{29}). The aldehydes range from tetracosanal (C_{24}) to dotriacontanal (C_{32}) with the highest concentration of the last member of the series. The free fatty alcohols range from octacosanol (C_{28}) to tetratriacontanol (C_{34}) whereas the alcohols obtained after ester hydrolysis contained two more lower homologues of the series. Triacontanol (C_{30}) and dotriacontanol (C_{32}) were the major fatty alcohols. The esters range from hexacosyl laurate (C_{38}) to tetracontyl behenate (C_{56}).

Key words: *Euphorbia caducifolia*, Epicuticular wax composition, Friedelan-3α-ol.

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EFFECT OF NEEM LEAVES AND CARBOFURAN ON *PRATYLENCHUS THORNEI* ASSOCIATED WITH THREE WHEAT VARIETIES

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(Received May 18, 1992; revised October 6, 1992)

The effect of carbofuran and dry Neem leaves in single and double dosage on population of *Pratylenchus thornei* and growth parameters of 3 wheat varieties *viz.*, Faisalabad-85, Khyber-87 and Sarhad-82 were examined. All the three treatments resulted in increased root weight as well as the thousand seed weight. Population level of *P. thornei* was most reduced by double dosage of neem.

Key words: *Pratylenchus thornei*, Wheat, Control, Carbofuran, Neem.

Short Communication

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A New Cause of Fruit Rot of Chillies in Pakistan

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(Received February 6, 1992; revised November 8, 1992)

Technology Section

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UTILIZATION OF COMPOSITE WHEAT AND SAFFLOWERS FOR BALADY BREAD MAKING

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(Received March 12, 1992; revised October 15, 1992)

5, 10, 15 and 20 percent of the normal wheat flour content in balady bread was replaced with equivalent amounts of defatted safflower (DSF) of 75% extraction. Farinograph absorption, dough development time, dough weakening and mixing tolerance index increased and dough stability decreased as the amount of safflower in the blends were increased. With increase in the level of safflower, dough strength, resistance to extension and proportional number decreased and dough extensibility increased. The incorporation of 10% DSF into balady bread resulted in increase of ≈20 and 60% in protein and crude fibre respectively. The quality of balady bread was within extra standard at 15% level of DSF incorporation, but 20% addition of DSF the bread was rated as standard. Flavour was adversely affected at 10% or greater replacement level of defatted safflower.

Key words: Wheat, Safflowers, Balady bread.

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STUDIES ON THE PREPARATION AND STORAGE STABILITY OF CARBONATED POMEGRANATE DRINK

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(Received February 6, 1992; revised October 31, 1992)

This study was conducted to investigate the effect of different levels of fruit juice on physico-chemical properties and consumer acceptability of carbonated pomegranate drink during an extended period of storage. On the basis of organoleptic evaluation carbonated pomegranate drink containing 10% of fruit juice was found to be the best, having 1.0 mg% ascorbic acid, 11.78% sucrose, 1.3% reducing sugar, 0.24% acidity and 3.14 pH. Decreases in ascorbic acid and sucrose, with corresponding increases in acidity and reducing sugars were noted after a storage period of 80 days, yet the drink remained acceptable to the consumers.

Key words: Carbonated, Kandhari, Kieselguhr.

Introduction

prepare a carbonated drink from pomegranate fruit and to

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DIGESTIBILITY OF CORN COBS AFTER AMMONIATION BY THE RUMINANT MICROFLORA

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(Received September 2, 1991; revised July 28, 1992)

The effect of ammoniation on the chemical composition and digestibility of corn cobs was studied. The increases in dry matter digestibility was more than 80 and 140% on treatment with 5% aqueous ammonia and 4% sodium hydroxide respectively. Maximum increase in dry matter digestibility was found to be almost 200% when corn cobs were successively treated with 4% sodium hydroxide and 5% aqueous ammonia. An improvement in the digestibility of cellulose, minerals and organic matter was also observed after these treatments. A two fold increase in nitrogen contents was observed at a level of 1% aqueous ammonia. However, no significant increase in nitrogen contents was noted by increasing the level of ammonia from 1 to 5%. Reduction in lignin contents was also found after ammonia treatment.

Key words: Corn cobs, Ammoniation, Digestibility.

Introduction

Alkali treatment. The material was thoroughly mixed