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Physical Sciences Section

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PINNATIFOLIDE, A NEW METABOLITE FROM RED ALGA *LAURENCIA PINNATIFIDA* LAMOUR

VIQAR UDDIN AHMAD, MOHAMMAD SHAIQ ALI, SHAHEEN BANO AND MUSTAFA SHAMEEL*
H.E.J. Research Institute of Chemistry, University of Karachi, Karachi-75270, Pakistan

(Received December 13, 1990; revised July 31, 1991)

A new metabolite pinnatifolide has been isolated from methanolic extract of red alga *Laurencia pinnatifida*. It showed significant antibacterial activity against gram positive bacteria. Spectroscopic methods have been used to characterise pinnatifolide as tris- β -butyrolactone.

Key words: Pinnatifolide, Red alga, *Laurencia pinnatifida* Lamour.

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ADSORPTION OF GLYCOLIC AND LACTIC ACIDS FROM AQUEOUS SOLUTIONS ON CHARCOAL

A. RASHEED KHAN, FAHIM UDDIN* AND GHAYASUDDIN KHAN*
PCSIR Laboratories Complex, Karachi-75280, Pakistan

(Received June 17, 1990; revised January 9, 1991)

Adsorption of glycolic and lactic acid from aqueous solutions on surface of activated charcoal at 30° have been accomplished by titrometric method. The rate of adsorption of glycolic acid on activated charcoal is greater than lactic acid. Nature and number of functional groups attached to the side chain influence the constants involved in the langmuir (1/a, 1/ab) and Freundlich (Log a, 1/n) isotherms alongwith the side chain. A possible explanation is also given.

Key words: Polarity, Adsorbate, Adsorbent.

Introduction

amount of acid which could not be adsorbed on the surface of

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LEAD AND THE HEAVY METALS IN THE STREET DUST OF METROPOLITAN CITY OF KARACHI

A.H.K. YOUSUFZAI

PCSIR Laboratories Complex, Karachi-75280, Pakistan

(Received March 3, 1991; revised July 15, 1991)

Street dust has been used as a mean of describing the level of heavy metals present in the metropolitan city of Karachi. Samples of road sides dust were collected in the months of April, May and June 1990 from forty one location along the intersection of major roads where traffic density was found to be high. Heavy metals such as Pb, Zn, Mn, Cu, and Cd were estimated. The range of average concentration of Pb was around 810 to 4527, Zn 112 to 2215, Cu 46 to 315, Mn 72 to 481 and Cd 0.2 to 4.5 ppm. The daily average traffic was also recorded. A definite correlation was found between mean lead level and daily average traffic. It was concluded that the major source of lead in road side dust of Karachi city was mostly contributed by leaded gasoline from vehicular traffic. Raising children in high leaded environment will definately have long term effect on mental and physical behaviour in future.

Key words: Street dust, Lead, Heavy metal, Traffic density, Correlation.

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TRICARBONYLCHROMIUM π -COMPLEXES OF ZN(II) TETRA (P-SUBSTITUTED PHENYL) PORPHIN

ZAHIR U. SIDDIQUI AND LOKE A. SUAN*

Department of Chemistry, University of Karachi, Karachi-75270, Pakistan

(Received February 21, 1991; revised August 8, 1991)

Tricarbonylchromium π -complexes of some Zn(II) tetra (p-substituted phenyl) porphin have been prepared by interacting hexacarbonyl chromium and Zn(II) tetra (p-substituted phenyl) porphin. Infrared spectra of these complexes in carbonyl stretching region shows two strong bands indicating a local C_{3v} point group symmetry. Visible spectra displays a shift toward higher wavelength in bands of Zn(II) tetra (p-substituted phenyl) porphin on addition of $Cr(CO)_3$ group. No exchange of electron density between peripheral substituted phenyls seems to occur via porphin system in these complexes. An improved technique of preparation is developed and used to prepare these complexes. In this technique there is minimum loss of hexacarbonylchromium due to sublimation and no nitrogen gas pressure adjustments required after short intervals.

Key words: Tricarbonyl-porphin complexes.

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MIXED LIGAND TRANSITION METAL COMPLEXES OF IMIDES AND AMINES

M. S. ALAM, Q. ISLAM AND M. S. ISLAM

Department of Chemistry, University of Rajshahi, Rajshahi, Bangladesh

(Received July 20, 1989; revised July 9, 1991)

Mixed ligand complexes of Cu (II), Co (II) and Ni (II) with phthalimide as primary and amines as secondary ligands were prepared and characterised by elemental analysis, conductivity and magnetic measurement and infrared and electronic spectroscopic studies. Cu (II) and Ni (II) complexes were found to have both octahedral and square planar structure with the secondary ligands. Co (II) complexes formed both octahedral and tetrahedral complexes. The composition of the complexes are (MP_2L_4) and (MP_2L_2) for six and four coordinate complexes respectively, where, M = Cu (II), Co (II) and Ni (II), P = deprotonated phthalimide and L = aniline, n-butylamine, t-butylamine and ethanolamine.

Key words: Mixed ligand, Metal complexes, Amines.

Biological Sciences Section

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LIPID STUDIES OF *CITRULLUS VULGARIS* OF THE FAMILY CUCURBITACEAE

M. AKHTAR JAVED, M. Y. RAIE AND HAIDER ALI*

PCSIR Laboratories Complex, Lahore-54600, Pakistan

(Received December 15, 1990; revised July 4, 1991)

Citrullus vulgaris (watermelon seed oil (23.3%) was classified into hydrocarbons (1.4%), wax esters (2.2%), triglycerides (73.0%), free fatty acids (1.8%), 1:3 diglycerides (5.5%), 1:2 diglycerides (2.1%), alcohols (0.5%), sterols (2.0%), 2-monoglycerides (2.0%), 1-monoglycerides (4.0%), monogalactosyl diglycerides (0.5%) phosphatidyl ethanolamines (1.2%), phosphatidyl cholines (1.4%), lysophosphatidyl ethanolamines (1.0%), lysophosphatidyl cholines (0.6%), and phosphatidyl inositols (0.8%). Fatty acids (C_{12} - C_{20}) composition of all lipid classes, neutral as well as polar was determined by the application of thin layer and gas liquid chromatography.

Key words. Lipid, *Citrullus vulgaris*, Cucurbitaceae.

INDUCED SPAWNING AND LARVAL GROWTH OF THE RABBIT FISH, *SIGANUS GUTTATUS* (OSTEICHTHYES; SIGANIDAE)

RIAZ KAUSAR AND J. V. JUARIO

Animal Sciences Institute, National Agricultural Research Centre, Islamabad, Pakistan

(Received November 6, 1989; revised June 3, 1991)

Induced spawning of the rabbit fish, *Siganus guttatus* was accomplished with injections of reproductive hormones. Males and females were injected with testosterone and HCG; respectively. Eggs were hatched and larvae reared to the fry stage. Successful spawning was observed in experimental female fish by giving injections of human chorionic gonadotropin at a dosage rate of 500 Iu per treatment per fish (300g) at every 24 hrs until they spawned. Males received only one injection of testosterone at a dosage rate of 0.2cc/fish (300g). The rate of fertilization was > 90%. Hatching occurred within 22-27 hrs after fertilization at an ambient temperature of 26-30°, salinity of 32-36 ppt and dissolved oxygen of 5.2-6.1 ppm. Larvae were reared for 20 days by feeding them on *Isochrysis*, *Tetraselmis*, *Brachionus* sp. and *Artemia salina* nauplii. The overall survival rate of larvae was 0.71% and the mean length of survivors was 9.29 mm after 20 days.

Key words : *Siganus guttatus*, Induced spawning, Larval rearing.

EFFECT OF FROZEN STORAGE ON THE QUALITY OF JAMUN FRUITS

RIAZ AHMAD RIAZ AND IFTIKHAR AHMAD TABASSUM

Food Technology Department, University of Agriculture, Faisalabad, Pakistan

(Received August 16, 1990; revised June 20, 1991)

The effect of frozen storage on the quality of edible portion of different jamun varieties was studied. During storage, acidity, ash, total soluble solids and reducing sugar contents increased while moisture, ascorbic acid, pH and non-reducing sugars decreased in both varieties of jamun. Though scores for colour, flavour, taste, and texture decreased while those of sweetness increased upto 300 days of frozen storage, the frozen product remained in good quality as regards its acceptability.

Key words: Frozen storage, Raa and desi fruit, Organoleptic evaluation.

IRRIGATION SCHEDULING OF MUSTARD USING OPEN PAN EVAPORATION

A. A. SARKAR*, S. M. A. ALI, M. S. U. TALUKDER AND M. AHMED

Department of Irrigation and Water Management, Bangladesh Agriculture University, Mymensingh, Bangladesh

(Received September 23, 1989; revised July 4, 1991)

An experiment was conducted at the Bangladesh Institute of Nuclear Agriculture farm during the winter season of 1987-88, for making an irrigation schedule of the newly developed mustard mutant BINA-2 and for investigating the use of irrigation water and its effect on the yield and yield contributing characters of the mustard mutant. Results of the study indicated that single irrigation showed positive response to the increase of the yield of the mutant over control. The highest yield (about 10% higher over control) and water use efficiency were obtained with one irrigation of 3.30cm at the pre-flowering stage and in the control, respectively. The results also showed that increasing irrigation frequency, yield and water use efficiency gradually decreased indicating that application of irrigation water more than one caused the wastage of water. The results thus revealed that depending on rainfall and soil moisture condition one irrigation at the pre-flowering stage is necessary for higher yield of the mustard mutant in this location.

Key words: Mustard, Mutant, Yield, Water use, Irrigation scheduling.

Short Communication

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**Soma in the Light of Six Minimum Essential
Categories of Information**

S. MAHDIHASSAN

SD-34, Block A, North Nazimabad, Karachi, Pakistan

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Technology Section

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FATTY ACID PROFILE OF HYDROGENATED OILS USED IN PAKISTAN

AFTAB BEG CHUGHTAI, JAVED IQBAL KHAN, MANZOOR AHMAD AND SHAFIQ AHMAD KHAN
PCSIR Laboratories Complex, Lahore-54600, Pakistan

(Received August 10, 1989; revised June 17, 1991)

Fatty acid composition of the hydrogenated vegetable oils produced in Pakistan over the last three decades has been determined and compared. The vanaspati of today has been found to be more balanced with regard to essential fatty acids than the product of yester years.

Key words: Fatty acid, Hydrogenated oils.

Introduction

to contamination and adulteration in the market was elimi-

PREPARATION OF TOLUENE FROM XYLENE

M. A. BUTT, S. SALAM, R. KAMAL AND A. AKHTER

Leather Research Centre, PCSIR, South Avenue, SITE, Karachi, Pakistan

(Received November 28, 1990; revised August 11, 1991)

The disproportionation of xylene to toluene has been studied in presence of different catalysts and catalyst concentrations.

Key words: Toluene, Xylene, Dealkylation.

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STUDY ON WASHABILITY CHARACTERISTICS OF LOW GRADE COALS OF MACH AREA, BALOCHISTAN

ABIDA RIAZ, SHABBAR ATIQ, I.H. KHAN AND M.A. QAZI*

PCSIR Laboratories Complex, Lahore-54600

(Received December 31, 1990; revised May 27, 1991)

The low grade coal samples of Mach area fall in four major groups on the basis of proximate analysis, containing 11.4 to 49.0% ash, 14.1 to 29.2% fixed carbon and 29.5 to 49.0% volatile matter. Majority of the samples, having relatively low disintegration in water were found amenable to washing using dense media separation. As a result 21.9 and 27.7% of ash in the coals could be reduced to 13.8 and 15.3 cumulative ash per cent respectively, at 1.60 (S.G), with 50-52% coal yield the sink. Optimum grade recovery conditions were found and discussed in the paper.

Key words: Washability, Coals, Pakistan.