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NITRATION STUDIES IN THE β -CARBOLINE ALKALOID, YOHIMBINE

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(Received August 25, 1990)

Nitration studies in the β carboline alkaloid, yohimbine (1), afforded two isomeric mononitro derivatives II and III, which have been characterized as 12-nitroyohimbine and 9-nitroyohimbine respectively through chemical and spectral studies. A series of new potentially significant derivatives (IV-IX) of II have also been prepared.

Key words: Yohimbine, β -Carboline, Nitration, 12-Nitroyohimbine, 9-Nitroyohimbine.

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INFRARED STUDIES OF SOLVENT-SOLUTE INTERACTIONS; DEUTERIUM SUBSTITUTED DERIVATIVES OF ACETYLENE IN SOLUTION

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(Received May 10, 1989; revised August 9, 1990)

The Buckingham's theory deals with the effects of solvents on deuterated vibrations of the solute as compared to the normal IR group frequencies. Acetylene and its deuterium substituted derivatives have been studied taking the relative frequency shifts and band- half widths of C-H and C-D vibrations.

Key words : Solvent-solute interaction, Deuterated-acetylene.

SEPARATION – SPECTROPHOTOMETRIC DETERMINATION OF Mo (vi) AND V (v) IN THE THIOCYANATE SYSTEM

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(Received June 27, 1987; revised August 4, 1990)

An investigation of the complexes formed between Mo(vi) and V(v) and thiocyanate in hydrochloric acid solution has been carried out. The extractability of Mo(vi) by high molecular weight amine (HMWA) in organic solvent (CHCl_3) and its separation from V(v) was examined. The orange - coloured complex of Mo(vi) - SCN is quantitatively extractable into the organic phase containing tribenzylamine (TBA) a high molecular weight amine (HMWA), whereas the blue-coloured complex of V(v) - SCN formed under the same conditions gets separated in the aqueous phase. On the basis of selective extractability, a method has been developed for the separation and spectrophotometric determinations of Mo(vi) and V(v) in presence of many other elements. The molar extinction coefficients were found to be 0.91×10^4 and $0.70 \times 10^4 \text{ M}^{-1}\text{cm}^{-1}$ respectively for Mo(vi) and V(v). The extractability of the complex by HMWA suggests that the coloured species is anionic.

Key words : Separation, Determination, Molybdenum, Vanadium.

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SYNTHESIS OF SOME NEW PHTHALAZINONE - SCHIFF BASES AND OTHER RELATED PRODUCTS OF POSSIBLE BIOLOGICAL ACTIVITY

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(Received December 30, 1989; revised August 12, 1990)

Several hydrazones, thiazolidinones, oxadiazoles and pyrazoles derived from phthalazine acetic acid hydrazide were prepared and tested for their antibacterial and antifungal activities.

Key words: Hydrazidomethyl phthalazinone, Phthalazinedone-schiff, Cyclocondensation.

Introduction

Cyclocondensation of compounds IVb,c and f with

STUDIES ON AMINO ACIDS OF *CARISSA CARANDAS*

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(Received December 12, 1989; revised September 19, 1990)

The amino acid composition of the seeds and pulp from the fruits of *Carissa carandas* was studied using automatic amino acid analyzer which significantly revealed the presence of only six free amino acid in pulp juice. The amino acid pattern is highly specific and may be used as an authentic index for evaluation of adulteration. The analysis of ash of the fruit indicated large quantity of potassium ions.

Key words. *Carissa Carandas*, Amino acids, Composition.

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VISCOSITIES AND FLOW ACTIVATION ENERGIES OF CARBOXYLIC ACIDS IN AQUEOUS SOLUTIONS

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(Received March 3, 1987; revised August 11, 1990)

Viscosities η for formic, acetic, propionic and butyric acids in aqueous solutions were determined using thermostated Ubbelohde flow viscometer in the temperature range of 25° to 65°. The flow activation energies $E\eta$ were determined using Andrade type equation, where the slope of $\log \eta$ vs $1/T$ plot gives $E\eta$. Explanation of the results are given in terms of acid-acid, acid-water and water-water interactions with special emphasis on hydrogen bonding in solutions.

Key words: Viscosities of acids, Flow activation.

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SHORT COMMUNICATION

**Mineralization of Kumhar Magnesite,
Hazara, NWFP**

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(Received April 14, 1990; revised September 10, 1990)

Kumhar magnesite deposit is 20 km. north west of

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STUDIES ON THE REPELLENT ACTIVITY OF SOME INDIGENOUS PLANT OILS AGAINST *TRIBOLIUM CASTANEUM* (HERBST.)

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(Received December 20, 1989; revised August 29, 1990)

Oils from 18 local plants were tested for their repellent activity against *Tribolium castaneum* (Herbst). The oils from *Luffa acutangula* (L.), *Eruca sativa* (Miller) and *Ocimum sanctum* (L.) showed appreciable repellent activity (Class IV) for a period of two months. *Lycopersicon esculantum* (Miller.), *Linum usitatissimum* (L.), *Mangifera indica* (L.) and *Rosa damascena* (Miller.) showed moderate activity (Class III) at the comparable dose. Over a longer exposure (4 months) *Luffa acutangula* and *Eruca sativa* oils maintained class IV repellency, however *Ocimum sanctum* oil lost its activity after two months.

Key words: Repellency, *Tribolium castaneum*, *Luffa acutangula*, *Eruca sativa*.

Introduction

The present study was undertaken to screen repellent

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TOXICOLOGICAL EVALUATION OF *CALENDULA OFFICINALIS* - LINN

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(Received October 3, 1989; revised August 20, 1990)

The aqueous extract of *Calendula officinalis* - Linn (flowers, roots and whole plant) was evaluated for oral as well as intravenous toxicity in rats and mice and LD₁₀₀, LD₅₀, ED and TH was determined. The toxicity was also found to be dependent on the dose and route of administration.

Key words : *Calendula officinalis*, Toxicity, Lethal dose.

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TOXICOLOGICAL EVALUATION OF *CALENDULA OFFICINALIS* - LINN

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Key words : *Calendula officinalis*, Toxicity, Lethal dose.

EFFECT OF STORAGE ON THE QUALITY OF DEHYDRATED GUAVA (*PSIDIUM GUAJAVA-L*)

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(Received January 29, 1989; revised August 17, 1990)

Guava was purchased from the local market for dehydration. The powder was packed in sealed polyethylene bags, closed jars and dessicator at room temperature (13-35°). The fresh guava was analysed for chemical composition. The freshly prepared guava powder was also analysed and contained 5.2% moisture and 1426.30 mg/100g ascorbic acid. The powder was also analysed for non-enzymatic browning measured as optical density (O.D) at 440 nm. The guava powder packed in different containers, was analysed periodically at monthly intervals for 9 months. Maximum retention of ascorbic acid was observed in powder stored in dessicator and minimum kept in polyethylene bags. The effect of SO₂ on the quality of guava powder and moisture on the loss of ascorbic acid was also studied.

Key words: Guava powder, Non-enzymatic browning, Ascorbic acid.

Introduction

meta bisulphite solution (0.2%) for 5 min. and then

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THE CRUSTACEAN WOOD-BORER *SPHAEROMA TEREBRANS* BATE FROM KARACHI MANGROVES (PAKISTANI BORDER OF THE NORTHERN ARABIAN SEA)

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(Received April 9, 1990; revised August 7, 1990)

A crustacean wood borer, *Sphaeroma terebrans* Bate, is recorded for the first time from mangroves of Karachi, northern Arabian Sea. Seasonal changes in the occurrence of *S. terebrans* in three localities of Karachi mangroves are described. Ecology and environmental variables of the study sites and their relevance to the distribution pattern of the borer is discussed.

Key words: Borers, Crustacea, Mangrove

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GRAPHIC ANALYSIS FOR GENE ACTION CONTROLLING DIFFERENT QUANTITATIVE CHARACTERS OF UPLAND COTTON PLANT

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(Received March 21, 1985; revised July 25, 1990)

From the results of F_1 full diallel analysis of four unrelated cotton genotypes, the nature of the gene action for yield of seed cotton, boll number, boll weight and staple length appeared to be overdominant whereas genes for lint percentage were cumulative in their effects showing non-allelic interaction. The cultivars St. 213 and AC 134 proved the best general combiners for yield and boll number. For boll weight, AUH 33 appeared to be good combiner whereas ST. 213 and Coker 310 showed their superiority for staple length and lint percentage respectively. The inheritance pattern of the characters suggested that development of F_1 hybrids involving these cultivars may show their promise for increasing cotton production.

Key words. Gene action, Cotton plant, Graphic analysis.

SHORT COMMUNICATION

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**The Possible Role Of Calcium in Determining
Sex-Ratio Favourable To The Female
Lac-Insect**

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HIGHER FATTY ACID ESTERS OF LACTIC ACID

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(Received December 6, 1989; revised August 26, 1990)

Direct esterification of fatty acids with lactic acid was carried out by solventless technique to give products containing essentially monoesters by activating the hydroxy group of lactic acid with the help of an alkali metal catalyst under specialized conditions. After finding a safe and convenient method fatty acid upto C_{18} have been esterified with lactic acid. Characteristic of these compounds were evaluated by thin layer chromatography, melting point, ash contents and nuclear magnetic resonance. Ash contents of the compounds have been determined so as to observe the side reaction of the catalyst.

Key words: Fatty acid esters, Lactic acid, Glycerides.

Introduction

Experimental

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REMOVAL OF CHROMIUM (VI) IONS FROM SOLUTIONS WITH ACTIVE CARBON PREPARED FROM RICE HULLS

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(Received March 11, 1990; revised August 22, 1990)

In this study, the active carbon was prepared from rice hulls by activating with and without zinc chloride at the different temperatures. Then the obtained active carbon has been used for Cr(VI) removal from solution. The effects of carbonization temperature of hulls, concentration of Cr(VI), and adsorbate-adsorbent ratio on adsorption of Cr(VI) ions were examined in order to find out the optimum conditions. The removal of Cr(VI) ions ranged from 30.5% to 99.4% when 20, 100 and 200 ppm solutions were used.

Key words : Adsorption, Active carbon, Rice hulls.

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WATER TOLERANCE OF MOTOR FUEL GRADE GASOLINE/ALCOHOL BLENDS

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(Received July 3, 1988; revised September 30, 1990)

A comparison is made between ethanol and methanol's ability to improve the water tolerance of gasoline blends. It is shown that ethanol is about 18 times more effective than methanol in improving the water tolerance of the alcohol/gasoline blends. The effect of cyclohexane, and p-xylene on the water tolerance of ethanol/gasoline blends has been studied. It is shown that these additives produce negative effect on the water tolerance of the blends. Whereas acetone, butanone-2 and ethyl acetate additives improved the water tolerance of the ethanol/gasoline blend by 18% mass. Butanol-1 is considered as the most effective additives, since it improved the water tolerance of the ethanol/gasoline blend by 43% mass.

Key words : Water tolerance, Motor fuel, Grade gasoline, Alcohol blends.

FREE RADICAL COPOLYMERIZATION OF STYRENE AND SHELLAC - GLYCOL ESTER

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(Received April 1, 1990; revised September 9, 1990)

The benzoyl peroxide initiated copolymerization of styrene and shellac-glycol ester (SGE) was accomplished at 75°. Both styrene and SGE molecules participate in the reaction and the growing polymer chains of styrene and SGE couple to form a copolymer at all monomeric ratios. The monomer reactivity ratios of styrene (r_1) and SGE (r_2) as determined using integrated form of Mayo were found to be $r_1=0.37$ and $r_2=1.5$. With an increasing concentration of SGE in the binary mixture, the copolymer of increasing molecular weight ($M_n = 140756 - 211443$) were obtained. The copolymer is light brownish solid substance. It softens at 107-108° and decomposes at 150°. The copolymer obtained at high feed of SGE (90%) is highly tacky and film forming. It may be used as a sealant for gaskets.

Key words: Shellac-glycol ester, Esterification, Degradation.