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Physical Sciences Section

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ISOLATION AND STRUCTURE OF HOLARRICINE - A NEW ALKALOID FROM THE SEEDS OF *HOLARRHENA ANTIDYSENTERICA* LINN

Salimuzzaman Siddiqui and Bina S. Siddiqui

H.E.J. Research Institute of Chemistry, University of Karachi, Karachi, 32, Pakistan

(Received May 5, 1981)

A new alkaloid provisionally named as holarricine has been isolated from the seeds of *Holarrhena antidysenterica* Linn. Its structure as 11-, 16- diketo - holarrhimine as indicated through chemical and spectral data has been further supported through its Clemmensen reduction to holarrhimine.

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CHARACTERISTIC DISTRIBUTION OF TOTAL, DIRECT AND DIFFUSE SOLAR RADIATIONS AT KARACHI, PAKISTAN

Firoz Ahmad, S. A. Husain, S. M. M. R. Naqvi and M. Wasim Akhtar

Department of Physics, University of Karachi, Karachi 32, Pakistan

(Received January 27, 1981)

From the available weather data the total, direct and diffuse solar radiation on a horizontal surface for Karachi is estimated. Analysis of the result shows the variation of direct and diffuse components of solar radiations. The sky in summer shows greater contribution of diffuse radiation whereas sky conditions are clear in winter because of less content of dust, water vapours, ozone etc. in the atmosphere. The relationship obtained for Karachi are in close agreement with those developed by Liu and Jordan.

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CHARACTERISATION OF NAGAR PARKER CLAY

M. Yusaf, M. Hanif, M. Iqbal, M.A. Mian and A.R. Qureshi

PCSIR Laboratories, Lahore, Pakistan

(Received January, 1980)

Nagar parker clay has been studied with a view to its mineral characterisation and determination of physical and chemical characteristics. The study involves X-ray analysis, differential thermal analysis, IR absorption analysis, chemical analysis, particle size analysis, pyrometric cone equivalent etc. The results indicate it to be an excellent quality china clay.

SPECTROPHOTOMETRIC DETERMINATION OF SODIUM AZIDE**Part I. Indirect Colorimetry**

Aftab Beg Chughtai, Bushra Asghar, Shafiq Ahmad Khan and M.K. Bhatti

PCSIR Laboratories Lahore, Pakistan

(Received September 27, 1980)

The redox reaction between sodium azide and ceric ammonium nitrate has been spectrophotometrically applied to the determination of sodium azide with satisfactory results (accuracy: $\pm 0.2\%$). It has been shown that the present method has advantages over the usual titrimetric and gasometric determination of the azide.

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SYNTHESIS AND SPECTROSCOPIC STUDIES OF 2-ARYLIMINO-4, 6-DIPHENYLPYRANS AND THEIR ISOMERIC 2-PYRIDONES

Amir Sultan Afridi

Govt. Postgraduate Jahanzeb College, Saidu-Sharif, Swat, Pakistan

(Received November 11, 1980)

A number of 2-arylimino-4, 6-diphenylpyrans (III) have been prepared from 2-arylamino-pyrylium chlorides (II). 2-Arylimino-4, 6-diphenylpyrans (III) are smoothly rearranged by sodium ethoxide to the isomeric 1-aryl-4, 6-diphenyl-2-pyridones (IV). The isomeric compounds (III) and (IV) are readily distinguished by their UV and mass spectra.

Biological Sciences Section

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INTERACTION OF STARVATION AND GAMMA RADIATION ON THE FECUNDITY OF *TRIBOLIUM CASTANEUM* (HERBST) (COLEOPTERA: TENEBRIONIDAE)

Sana Ullah Khan Khattak* and Mohammad Shafique

Nuclear Institute for Agriculture and Biology, Faisalabad

(Received April 14, 1981)

Starved and unstarved beetles of *Tribolium castaneum* (Herbst) were irradiated with low doses of gamma radiation viz:- 4, 6, 8, 12 krad and their fecundity was studied up to 8 days under controlled laboratory conditions. It was recorded that fecundity decreased immediately following irradiation, but the subsequent recovery was dose dependent. The rate of oviposition increased with an increased period of starvation. Pre-irradiation starved beetles were less fecunditive than the post-irradiation ones. Irradiated individuals, though, laid eggs, but none of the eggs hatched at 8 and 12 krad.

EFFECTS OF IRON AND MANGANESE ON THE GROWTH AND NUTRIENT CONTENTS OF RICE PLANTS, GROWN UNDER FLOODED AND UNFLOODED CONDITIONS

S.M. Alam

Atomic Energy Agricultural Research Centre, Tandojam, Sind

(Received June 1, 1980)

Experiments with rice plants growing on loamy soil, supplied with variable levels of Fe and Mn, and subjected to two moisture regimes, made it clear that under waterlogged (anaerobic) condition the dry matter yield, plant height and contents of Mn, Fe and P in rice plants increased considerably indicating that soil submergence enhanced the availabilities of Fe, Mn and P in the growth medium. It was also observed that Mn content in rice plants under submerged condition was always higher than that of Fe under the similar condition. Aerobic condition (unflooded) showed lesser growth and nutrient contents in rice plants than the anaerobic condition (flooded).

Technology Section

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TURPENTINE OIL-BASED CHEMICALS

Part. III. Polymerisation of 3-Carene and α -Pinene

A. Sattar, M. Javaid Iqbal, K.M. Janjua, S.A Khan and M.K. Bhattu

Oils, Fats and Waxes Research Division, PCSIR Laboratories, Lahore

(Received October 12, 1980)

Thermoplastic resins of varying softening points and molecular weights have been obtained from the cationically initiated polymerisation of 3-carene and α -pinene. Reaction conditions for the exothermic polymerisation with lewis acid catalysts have been studied and described.

IMPROVEMENT IN THE DIGESTIBILITY OF RICE STRAW BY ALKALI TREATMENT

F.H. Shah, Zia-ur-Rehman, A. Majid and A.D. Khan

PCSIR Laboratories, Ferozepur Road, Lahore 16, Pakistan

(Received August 18, 1980)

The dry matter digestibility of rice straw increased from 33.33 to 77.07 % on treatment with 3.5 % sodium hydroxide. Ammoniation (5 % w/w) and 1.5 % calcium hydroxide treatment increased dry matter digestibility up to 55.0 % and 46.07 % respectively.

EFFECT OF CHEMICAL TREATMENTS ON THE STABILITY OF DEHYDRATED CARROT*

A. K. Baloch

Chemistry Department, Gomal University, D.I. Khan, Pakistan

K. A. Buckle and R. A. Edwards

School of Food Technology, University of New South Wales, Australia

(Received April 4, 1981)

To improve the quality of dehydrated carrot, fresh carrot was treated with several chemicals prior to dehydration. The effectiveness of the chemicals was evaluated by following changes in carotenoid content, lipid oxidation, non-enzymic browning (NEB) and rehydration capacity of carrots after dehydration, and during 180 days of storage in air at 37° in sealed tinplate cans. Treatment with antioxidants, chelating agents and surface coating materials had little effect on the stability of dehydrated carrot. Ammonium bicarbonate, sodium tripolyphosphate and EDTA treatments enhanced discolouration, whereas treatment with calcium chloride adversely affected the rehydration capacity of dehydrated carrot. Treatment, with sodium tetraborate significantly improved the rehydration capacity, whereas sodium metabisulphite treatment retarded carotenoid breakdown and lipid oxidation, and inhibited changes causing discolouration and toughening of carrot tissue.