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Physical Sciences Section

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SOME EXTENSIONS OF VON BRAUN (BrCN) REACTION ON ORGANIC BASES: PART V

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(Received July 8, 1985)

In continuation of studies in the structure and activity relationship, a number of new derivatives of 8-amino-7-methoxy-1-methyl-1,2,3,4-tetrahydro- β -carboline have been prepared through some extensions of von Braun BrCN reaction.

RADIATION CHEMISTRY OF AQUEOUS SOLUTIONS OF THE HYPOIODITE ION

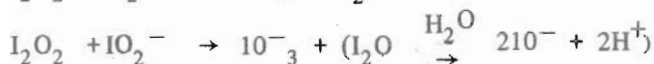
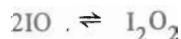
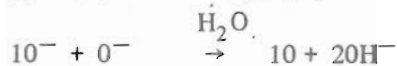
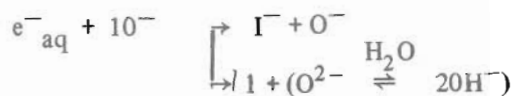
Mohammad S. Subhani and Aziza F. El Mesmary

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(Received January 23, 1983; revised May 23, 1985)

Steady state radiolysis of aqueous hypiodite solution has been carried out both in the presence of N_2 and N_2O . The radiation chemical yield for the disappearance of IO^- and for the products IO_3^- , O_2 and H_2 has been also determined.

A complete mechanism for the radiolytic decomposition of hypiodite ion in aqueous system is proposed which is as follows:



The calculated radiation chemical yields for $G(-IO^-)$, $G(IO_3^-)$, $G(O_2)$ and $G(H_2)$, based on this mechanism are in good agreement with the observed yields.

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SYNTHESIS AND SOME REACTIONS OF 6-(4-CHLORO-3-METHYL)-PHENYL-4-ARYL-3- OXO-2, 3, 4, 5-TETRAHYDROPYRIDAZINES

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(Received January 12, 1983; revised, May 25, 1985)

The present work deals with the synthesis of 6-(4-chloro-3-methyl)-phenyl-4-aryl-3-oxo-2, 3, 4, 5-tetrahydropyridazines (2) involving the interaction of α -aryl- β -(4-chloro-3-methyl)-benzoylpropionic acids (1) with hydrazines in boiling butanol. The reaction of the pyridazines (2) with $\text{PCl}_5/\text{POCl}_3$, P_2S_5 and secondary amines has been investigated. The reaction of the products with many other reagents has also been described. Dehydrogenation of the pyridazinone derivative (2b) with Br_2/AcOH afforded a hydropyridazine derivative (9). Different aspects of regioselective behaviour of organomagnesium reagents toward pyridazine derivative (9) has been investigated.

TRACE METAL CONTENTS OF COMMON SPICES

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(Received April 28, 1985)

Essential trace metals such as iron, copper, zinc, manganese, chromium, nickel and cobalt have been estimated in about two dozen commonly consumed spices and condiments, using atomic absorption spectrophotometry. The amount of iron is quite high in nearly all spices, followed by manganese and zinc. Chromium and copper are present in smaller quantities while nickel and cobalt occur in very small concentrations. Spices like caraway, parsley and cumin are rich in all trace metals. Turmeric, onion-seeds, dried ginger and poppy-seeds also contain appreciable amounts of trace metals. Other spices however contain low amounts of the trace metals.

**STUDIES OF *o*-CRESOL PHTHALEIN COMPLEXONE AND ITS METAL COMPLEXES:
Part I. Spectroscopic Studies of *o*-Cresol Phthalein Complexone with
Special Reference to Medium Effects on its Ionisation Constants**

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(Received November 6, 1985; revised April 29, 1985)

The electronic absorption spectra of *o*-cresol phthalein complexone (*o*-CPC) were studied in water-organic solvent mixtures at different pH. The absorption bands were assigned and the effect of solvent polarity on their position has been discussed. The pK_a of the acid-base equilibria set were determined and discussed in relation to the nature and proportion of the organic solvent added. The main bands of their spectra and signals of the $^1H_{NMR}$ spectra are as well discussed. The mixing of *o*-CPC with some transition and rare earth metal ions leads to drastic changes in colour and hence the visible absorption spectra of both organic compounds and metal ions.

Biological Sciences Section

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ASSESSMENT OF THE EFFECTS OF ACCESSORY REPLICATION PROTEINS ON THE 3' to 5' EXONUCLEASE ACTIVITY OF BACTERIOPHAGE T₄ DNA-POLYMERASE'

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(Received February 18, 1985)

The gene 32 protein of bacteriophage T4 induces a small increase in the turnover of precursor deoxynucleotide triphosphates during replication of primed single stranded X174 *am* 86 template. How much of this enhanced turnover involves misincorporated bases is not determinable with a natural template containing all the four bases. Gene 45 and gene 41 proteins did not show any effect on turnover γ .

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***SPORORIMELLA HEXAMERA* SP. NOV. FROM TURKHAM, PAKISTAN**

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(Received November 25, 1984; revised May 27, 1985)

The taxonomy and nomenclature of the genus *Sporormiella* has been discussed and a new species, *Sporormiella hexamera* from Turkham, Pakistan, has been proposed. Latin diagnosis and detailed English description for the said species have been given. In addition, *camera lucida* drawings of the perithecium, asci, ascospores as well as photomicrographs of asci and ascospores have been provided.

A SIMPLE LOW COST ARTIFICIAL DIET AND SOME MASS REARING TECHNIQUES OF GRAM POD-BORER, *HELIOTHIS ARMIGERA* (HUBN.) (LEPIDOPTERA: NOCTUIDAE)

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(Received September 10, 1984; revised May 27, 1985)

The study presents a detailed account of apparatus, procedures and artificial diet used in mass rearing of gram pod-borer, *Heliothis armigera* (Hubn.). Data on biology of *H. armigera* reared on artificial diet up to six successive generations reveal that the pupal recovery percentage ranged from 22.16 ± 3.06 to 80.95 ± 13.92 ; the larval and pupal periods varied from 16.57 ± 1.13 to 70.85 ± 1.63 days and 10.18 ± 0.87 to 53.85 ± 5.44 days respectively. The maximum egg yield/female was recorded to be 326.65 ± 163.51 in the third generation and maximum longevity 17.27 ± 3.38 days.

**CULTIVATION OF WINGED BEAN (*PSOPHOCARPUS TETRAGONOLOBUS* (L. DC.)
AT LATITUDE 25° – 54' NORTH, KARACHI, PAKISTAN**

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PCSIR Laboratories, Karachi-39

Successful cultivation experiments on the winged bean, *Psophocarpus tetragonolobus* (L. DC.), were conducted at latitude 25°–54', North, Karachi, Pakistan, for the first time, although efforts were also made by others to grow it at latitude 31° North Faisalabad, as well as at Islamabad, but the results were not encouraging and in very few cases was the pod formation was achieved. The detailed results of our experiments have been provided and different factors operative in the successful cultivation of the winged bean have been discussed. Based on our experience, certain broad conclusions have also been drawn.

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ANTIBACTERIAL ACTIVITY OF PEPTIDES ISOLATED FROM *CANDIDA TROPICALIS*

Atiya Abbasi, Tashmeem F. Razzaki,* and Z.H. Zaidi

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

(Received December 21, 1984)

Antibacterial activity against gram positive and gram negative bacteria of 9 peptides isolated from *Candida tropicalis* cell free broth is reported. Four peptides of distinct amino acid composition were found to be active against a number of pathogenic and non-pathogenic bacteria.

INTRODUCTION

SCREENING OF PAKISTANI PLANTS FOR ANTIBACTERIAL ACTIVITY

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(Received January 1, 1985; revised, May 4, 1985)

The present study involves the screening of 100 plant materials obtained from 64 important indigenous herbs of Pakistan using 50% ethanolic extracts. Eighteen different species of bacteria mostly involved in common infections of humans were used for the determination of antibacterial activity. Out of 100 plants material 29 showed broad spectrum antibacterial activity against Gram-negative and Gram-positive bacteria. 31 plants extract exhibited short spectrum activity against either Gram-negative and Gram-positive bacteria.

EFFICACY OF TENEKIL AGAINST NEMATODES PARASITISING CHILLIES (*CAPSICUM FRUTESCENS*)

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(Received, January 28, 1985; revised, June 6th, 1985)

An indigenous candidate nematicide, *Tenekil* (Polychlorinated petroleum hydrocarbon) was tried for controlling plant parasitic nematodes attacking chillies (*Capsicum frutescens*) grown at the Applied Biology Experimental Farm of the PCSIR Laboratories, Karachi. *Carbofuran* (*Furadan* 3 G) and *Aldicarb* (*Temik* 10% granular) were used as standard nematicides. At the conclusion of the experiment after 16 weeks, the number of plant parasitic nematodes recovered from *Tenekil*, *Carbofuran*, *Aldicarb* and control rows was 120, 110, 160 and 380 per 100 ml of soil, respectively. The average fruit yields were 357, 542, 443 and 190 g in the corresponding sets. The height of the plants and fresh and dry weights of the roots were inversely proportional to the number of nematodes recovered from soil.

**DEVELOPMENT OF ERUCIC ACID AND GLUCOSINOLATE-FREE RAPESEEDS
(CRUCIFERS) IN PAKISTAN**

Part VI. Fatty Acid Composition of the Introduced 'Candle' Cultivar

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PCSIR Laboratories, Lahore-16

and

Abdul Hamid Khan

Ayub Agriculture Research Institute, Faisalabad.

(Received May 29, 1985)

The fatty acid composition of the cultivar 'Candle' *B. campestris* seed oil has been determined for four generations. It has been observed that growing in the Pakistani conditions the erucic acid content in the seed oil has risen from 0 to 26.57%

Short Communication

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**VARIATION IN THE PROBOSCIS SPINES OF *PALLISENTIS MAGNUM*
SAEED AND BILQUEES, 1971**

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Department of Zoology, University of Karachi, Karachi.

(Received May 19 1984; revised June 5, 1985)

Technology Section

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LOW ASH ACTIVATED CARBON FROM RICE HUSK

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Received December 31, 1984)

Production of activated carbon as described here is achieved by leaching silica in rice husk char using caustic soda solution of different concentrations. It has been observed that 90% reduction in ash content is obtained by using 10% – 15% caustic solution. The process yields low ash, soft and activated carbon. The activity of the carbon has been determined against iodine, acetic acid and methylene blue. It has been found that the product activity against low molecular weight substances is considerably upgraded as compared with the char. This property, it has been suggested, can be utilized for gas and vapour adsorption from air and in upgrading the quality of water containing low molecular weight organic impurities.

EVALUATION OF RAW CLAY FROM TRIPOLI FOR ITS UTILIZATION AS A BUILDING MATERIAL

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(Received February 12, 1984)

The physico-chemical properties of Swani brick clay have been investigated by chemical analysis, grain size determination, dilatometric examination, drying and firing, linear shrinkages, loss of burning weight and water absorption studies. The results obtained by all above methods confirm that the clay is quite suitable for making solid bricks, hollow blocks, ceiling drain and roofing tiles. It has to be blended with fine grained fire clay for making vitrified pipes.

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OIL SEED PROCESSING TECHNOLOGY IN PAKISTAN
Part III. Village Level Technologies

Din Muhammad, Khizar Hayat Khan and Shafiq Ahmad Khan,

PCSIR Laboratories, Lahore-16

(Received, June 11th 1985)

Oil seed processing technologies as operative at village level in Pakistan have been identified. Comparative data/about their performance have also been compiled and discussed.