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Physical Sciences Section

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EFFECT OF NITRITE MEDIA ON K_D VALUES IN AQUEOUS AND AQUEOUS-METHANOLIC SOLUTION FOR CATION AND ANION EXCHANGERS

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The distribution coefficients of a group of metal ions has been determined in nitrite media, with cation as well as anion exchangers. Sodium nitrite solution has been used as a complexing agent for these metal ions, giving anionic complexes in aqueous solution. The same studies have been performed in aqueous methanol. Changing the proportion of methanol has a marked influence on complex formation and consequently on the K_D values.

**A COMPARATIVE STUDY ON ALBUMINS OF CHICKPEA AND LENTIL
COTYLEDONS BY CHROMATOGRAPHY ON HYDROXYLAPATITE AND
ELECTROPHORESIS IN POLYACRYLAMIDE GEL**

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(Received September 16, 1982; revised: August 28, 1983)

The albumins were separated from total salt-soluble protein extracts of chick pea and lentil cotyledons and were subjected to chromatography on hydroxylapatite column. Chromatographic fractions were analysed by electrophoresis in polyacrylamide gel.

The albumins of investigated cotyledons were represented by a multicomponent system, which were further characterised by a complex electrophoretic composition. A noticeable difference was observed between albumins of chick pea and lentil cotyledons in the number of chromatographic fractions eluted and their electrophoretic behaviour.

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QUANTITATIVE ESTIMATION OF DIASPORE BY DIFFERENTIAL THERMAL ANALYSIS

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(Received November 24, 1982)

A quantitative method is presented for the estimation of diasporite in different clays by differential thermal analysis using magnesium hydroxide as an internal standard. The effects of variations due to impurities such as quartz, iron oxide, calcite, dolomite, titanium oxide, kaolin and boehmite are dis-

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I.R. STUDIES OF PYRIDYL-SUBSTITUTED PYRAZINE COMPOUNDS

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(Received: December 28, 1981)

Infra-red spectra of 22 pyridyl-substituted pyrazine and dihydropyrazine compounds are studied using their solution in carbon tetrachloride, nujol mull and potassium bromide disc techniques. Different region of strong absorptions are recognised and the characteristic absorption are assigned.

ESTIMATES OF THE HEAT BALANCE TERMS AT THE AIR-SEA INTERFACE OFF THE COAST OF KARACHI

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(Received December 11, 1982; revised August 21, 1983)

The exchange of heat across the air-sea interface is a dominant factor that governs the temperature of water body. The rate of heat exchange at the water surface is the sum of the rates at which heat is transferred by incoming solar radiation, conduction, evaporation and back radiation. Heat balance terms for waters near Karachi show that the mean annual heat input at the water surface is 15.8×10^4 cal/cm² and the loss due to conduction, evaporation and back radiation is approximately 0.8×10^4 , 9.1×10^4 and 5.0×10^4 cal/cm² respectively throughout a year. The dominant component of heat loss from the sea is evaporation and is almost twice as large as that of back radiation. The conduction is even less than 10 per cent of the evaporation.

THE CHEMICAL CONSTITUENTS OF THE LEAVES OF *ACHRAS SAPOTA*

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(Received. December 29, 1981)

The amino acids and carbohydrates present in the leaves of *Achras sapota* have been studied. The amino acids present are aspartic acid, alanine, aminobutyric acid, arginine, cystine, glutamic acid, glycine, hydroxyproline, lysine, phenylalanine, proline, serine, tyrosine and valine. Five sugars namely: arabinose, fructose, glucose, galactose and lactose have been identified to be present. The n-hexane extract of the leaves has been found to contain tritriacontane and β -sitosterol as major constituents.

Short Communication

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SYNTHESIS OF SOME ALKYL-2-NAPHTHYL ETHERS

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Biological Sciences Section

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HISTOCHEMICAL SITE AND PATTERN OF DISTRIBUTION OF MONOAMINE OXIDASE ' SUCCINIC DEHYDROGENASE, AND α -GLYCEROPHOSPHATE DEHYDROGENASE IN THE ADRENAL CORTEX AND MEDULLA OF THE FLYING FOX – *PTEROPUS* *GIGNATEUS GIGANTEUS* BRUNNICH (MEGACHIROPTERA: MAMMALIA)

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(Received July 31, 1982)

Adrenal gland of the flying fox – *Pteropus giganteus giganteus* Brunnich showed a zonated cortex and medulla. Histochemical profile of monoamine oxidase (MAOO, succinic dehydrogenase (SDH), and α -glycero-phosphate dehydrogenase - α -GPDH) displayed positive and uniformly intense reactions in zona – glomerulosa; – fasciculata, and – reticularis; as well as in the medulla. Intense MAO activity was observed in the medullary cells as well as in the steroid secreting cells of the cortical zones. This in-built enzymatic system for degradation of catecholamines suggests its significant role in adrenal gland physiology. α -GPDH and SDH-activities in the various histological constituents of the adrenal gland showed positive and uniformly intense reaction. This indicates the importance of these enzymes in release of lipids for subsequent glycolysis (α -GDPH); and in sustained turnover of energy by oxidative pathways (SDH).

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The rich repertoire of diverse enzyme mechanisms in the bat adrenal indicates the occurrence of intricate metabolic pathways which assist in steroidogenesis, degradation of catecholamines and in maintenances of normal basal metabolic rate that facilitates participation of this endocrine gland in the various regulatory and co-ordinating processes.

GRAIN YIELD AND PROTEIN CONTENT OF WHEAT AS AFFECTED BY CYTOZYME APPLICATION AT VARIOUS GROWTH STAGES

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(Received December 31, 1981; revised September 21, 1983)

The effect of two products of cytozyme viz. dry seed⁺ and crop⁺ was studied on the growth, yield and protein contents of wheat variety LU 26. Dry seed was applied to the seed at the rate of 10 gms/kg seed whereas crop⁺ was sprayed at different growth stages of the crop at the rate of 450 ml/hectare. Both the dry seed⁺ and crop⁺ treatments increased the grain yield significantly over control. However, dry seed⁺ appeared to be better than crop⁺ and resulted in an increase of 15.5 per cent in grain yield over control by improving the number of productive heads per unit area, spike length, apikelets per spike and 1000 grain weight, whereas crop⁺ application at boost stage tended to increase the protein content of the grain.

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**EFFECT OF DIFFERENT LEVELS OF AMMONIUM SULPHATE ON
THE GROWTH AND N CONTENT OF RICE**

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Short Communication

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RADIOSENSITIVITY STUDIES IN RICE I, M₁ INJURY IN SEEDLING STAGE

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Technology Section

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IMPROVEMENT IN THE DIGESTIBILITY OF BEET PULP BY CHEMICAL TREATMENTS

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(Received March 27, 1982)

Dry matter digestibility of beet pulp was increased from 44.83 to 60.38 and 67.73 per cent when it was treated with 3.5 per cent sodium hydroxide or 2.5 per cent calcium hydroxide respectively. The digestibility of the pulp first treated with 0.5 per cent calcium hydroxide and subsequently with 5 per cent ammonia was 71.2 per cent. A three fold increase in non protein nitrogen was also observed.

A MINERALOGICAL AND CHEMICAL STUDY OF CHAGHI TRAVERTINE

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(Received May 4, 1980; revised August 12, 1983)

Chaghi travertines are spring water carbonate deposits of high purity. Small amounts of oxides of iron, magnesium, and silicon have been determined in the rocks which are well within the range of tolerable impurities. An inverse relationship between FeO and MgO content has been observed. X-Ray diffraction and DTA studies prove that the travertines are totally composed of calcite and not aragonite as was reported earlier which gave the name of 'aragonite marble' to this decorative stone.

**SOME OBSERVATIONS ON THE APPEARANCE, GROWTH AND
FIXATION OF GAS BUBBLE IN LIQUID STEEL
SOLIDIFYING IN GREEN SAND MOULD**

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(Received February 2, 1982; revised August 1983)

Certain phenomena concerning appearance, growth and fixation of gas bubble in solidifying steel have been studied by creating an atmosphere in a glass tube, similar to that existing in mould cavity. The models suggested for liq. steel at 1600° and solidifying steel are respectively glycerin and mixture of salol and azobenzol (93/7), which is transparent and solidifies at room temp. Physical morphology of gas defects is also discussed.