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Physical Sciences Section

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FURTHER STUDIES IN THE FRESH LATEX OF *EUPHORBIA TIRUCALLI*

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(Received August 4, 1980)

Apart from α -amyrine and cycloartenol, a new sterol has been isolated from the fresh latex of *Euphorbia tirucalli* and provisionally named as euphorbosterol. The chemical and spectral evidence established it as a distinct stereomer of stigmasterol.

**DETERMINATION OF STABILITY CONSTANTS OF COPPER COMPLEX WITH
O-CARBOXYPHENYLHYDRAZODIETHYLMALONATE
SPECTROPHOTOMETRICALLY**

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(Received January 31, 1979, revised December 13, 1980)

The complex formation of copper-*o*-carboxyphenylhydrazodiethylmalonate (*o*-CPHM) is studied spectrophotometrically. The composition of the complex is 1:1 and its stability constant as determined spectrophotometrically by three different methods, is 5.11, 5.45 and 5.39. The UV and IR spectra of the pure organic ligand as well as copper solid complex are given and the configuration of this complex is proposed.

THE ABSORPTION SPECTRA OF SOME 4(3H) QUINAZOLINONES

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(Received January 27, 1980, revised July 7, 1980)

Electronic absorption spectra of 2-phthalonyl-4*H*-3, 1-benzoxazin-4-one and various 4(3*H*)-quinazolinones have been taken at room temperature in different organic solvents. Spectral changes due to substitution and change of solvent are interpreted in relation to molecular structure. The important bands in the IR spectra are assigned and discussed in relation to molecular structures.

**DESIGN AND CALIBRATION OF THE H_{10} -MODE ABSORPTION CELL FOR 10- cm
WAVELENGTH BAND AND THE MEASUREMENT OF VARIATION OF ABSORBED POWER
WITH TEMPERATURE BY WATER COLUMN OF DIFFERENT LENGTHS**

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An absorption cell has been designed to study the dielectric properties of pure liquid water at 10-cm wavelength band. The dimensions of the cell are such that when filled with water only the H_{10} -mode can be transmitted. It is found that the energy absorbed/cm of the experimental water column inside the cell is approximately 10 dB.

For a fixed length of water column the amount of power absorbed is reduced with the increase of its temperature. The rate of change of absorbed power with the temperature is lower at higher temperature than that of at low temperature.

SPECTROPHOTOMETRIC DETERMINATION OF MICROQUANTITIES OF NITRITE

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(Received December 20, 1979, revised August 21, 1980)

A spectrophotometric method for the determination of nitrite in water and urine has been developed. It does not involve diazotization, therefore, it is reasonably convenient and simple to perform. It is sensitive, accurate and precise. The visual limit of identification is $2.5 \mu\text{g/ml}$.

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**THE FATTY ACIDS OF INDIGENOUS RESOURCES FOR POSSIBLE
INDUSTRIAL APPLICATIONS**

Part VI. Investigations of the Species of Solanaceae Family

Muhammad Salim, Din Muhammad, Manzoor Ahmad, Muhammad Yaqoob Raie,
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Biological Sciences Section

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EFFECT OF IRRADIATION AND STORAGE ON THE CYTOKININS OF EDIBLE MUSHROOM'S STIPE

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(Received January 17, 1980; Revised September 27, 1980)

Freshly harvested mushrooms were irradiated (0 and 2.5 kGy) and stored for 6 days at $14 \pm 2^{\circ}$. The samples were studied for the growth and cytokinin activity in the upper and lower portions of mushroom's stipe separately. Upper portion of the stipe elongated more than the lower portion during storage. Cytokinin activity was higher on 1 day than 0 day and then decreased during storage. Upper portion of stipe contained higher cytokinin contents than the base. Irradiation strongly inhibited the growth and cytokinin activity in both the investigated portions of mushrooms's stipe

EFFECT OF *MOMORDICA CHARANTIA* LINN. (KARELA) ON BLOOD GLUCOSE LEVEL OF NORMAL AND ALLOXAN-DIABETIC RABBITS

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(Received February 16, 1980; revised August 21, 1980)

Hypoglycaemic effect of the whole dried and powdered *Momordica charantia* fruit was studied in normal and alloxan-diabetic rabbits. Four different doses of *Momordica charantia* powder i.e., 0.25, 0.5, 1.0 and 1.5 g/kg body weight were administered orally after suspending in 1% carboxymethyl-cellulose. In normal rabbits, the 0.25 g/kg dose did not significantly affect the blood glucose level, but 0.5, 1.0 and 1.5 g/kg doses produced significant hypoglycaemia. In alloxan-diabetic rabbits the 0.25 and 0.5 g/kg doses did not significantly decrease the blood glucose level. However, 1.0 and 1.5 g/kg doses produced a significant hypoglycaemia.

The maximum decrease of blood glucose in normal and alloxan-diabetic rabbits occurred at 10 hr interval. The time required for the blood glucose to return to normal was usually more than 24 hrs. These results have been discussed in the presence of available literature and it is hypothesized that the whole powdered *Momordica charantia* fruit may contain more than one type of hypoglycaemic agents. These may be an alkaloid (producing effect only in normal rabbits) and an insulin-like substance which is capable of lowering the blood glucose level not only in normal rabbits but also in the diabetic rabbits.

INFLUENCE OF DIFFERENT AGROCLIMATIC CONDITIONS ON PROTEIN AND TRACE ELEMENT CONTENTS IN TRITICALES

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Four true breeding strains of triticale (NIAB-T-77, NIAB-T-157, NIAB-T-158 and NIAB-T-164) were grown at nine different locations at similar fertilizer level. Differences in the concentrations of protein, and trace elements (Zn, Cu, Mn and Fe) were determined. The soils corresponding to each location also were analysed for pH, EC_e and available Zn, Cu, Mn and Fe. Highly significant differences were obtained among varieties and locations for the variables under study. Similarly the soil characteristics also varied among different locations. Protein contents were markedly higher at two locations i.e. Islamabad, Rawalpindi, than other rainfed and even irrigated sites. Comparatively lower levels of Zn in soil at Islamabad resulted in lower seed-Zn contents. Correlations between mean values of essential nutrients (protein, Zn, Cu, Mn and Fe) and mean yield and mean grain weight with respect to locations, were non significant. Negative correlation existed between protein content and grain weight ($r = -0.754$).

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INFLUENCE OF IRON ON THE DRY MATTER YIELD AND MINERAL CONTENT OF MAIZE PLANT

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Technology Section

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THE RECOVERY AND EVALUATION OF MANGO STONE KERNEL FAT

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(Received January 19, 1980; revised June 21, 1980)

A technique for processing mango kernel fat from mango fruit is described. After removal of the fruit pulp the stones are dried, subsequently disintegrated in a locally designed and fabricated disintegrator, after which the kernel are separated from the shells. The fat is extracted from the powdered kernels with hexane. The average fatty acid composition of the fat of seven local varieties was determined by GLC to be C16:0 (10.7%) C18:0 (47.8%) C18:1 (37.2%) and C18:2 (4.3%).

UTILIZATION OF PINE NEEDLES

Part I. Extraction of pine fibres and their physical and chemical characteristics

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(Received January 1, 1980, Revised September 13, 1980)

Pine needles of Chir pine (*Pinus roxburgia*) were collected from Batrasi forest area. A chemical method has been developed for the extraction of pine fibres. Physical properties of pine fibres such as linear density, strength (dry, wet), tenacity, tensile strength, ultimate fibre diameter and length were determined. Moreover, chemical composition of the fibres such as cellulose, lignin, extractives, moisture and ash were also determined. The properties of pine fibres were compared with other vegetable fibres for assessing the end uses.