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Physical Sciences Section

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OXIDATION OF SULPHONAMIDES WITH LEAD TETRAACETATE

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(Received May 2, 1974; revised November 7, 1974)

Abstract. *p*-Toluenesulphonamide on treatment with lead tetraacetate in dimethylsulphoxide gave sulphoxamine in excellent yield, while in the presence of sulphides gave sulphilimine. No adduct was obtained on treatment of *p*-toluenesulphonamide with lead tetraacetate in presence of norbornylene, cyclohexene and tetracyclone. The reactions do not proceed via sulphonylnitrenes.

CYCLIC VOLTAMMETRIC STUDIES

Part III. Stability of 4-Nitroaniline and 1-Nitronaphthalene Anion Radical Intermediates in Alcoholic, Nitrilic and Mixed Solvent System

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(Received November 22, 1974)

Abstract. Cyclic voltammetric investigation were carried out on 4-nitroaniline and 1-nitronaphthalene in ethanol, acetonitrile, acetonitrile-ethanol (20% ethanol) and acetonitrile-water (25% water) mixture in order to study the stability of the anion radical intermediates. It was found that, while the anion radical of 1-nitronaphthalene was stable in ethanol, ethanol-acetonitrile, acetonitrile and acetonitrile-water mixture, anion radical of 4-nitroaniline was stable in acetonitrile, acetonitrile-ethanol and acetonitrile-water mixture but unstable in pure ethanol.

The shift in $E_{1/2}$ is also qualitatively discussed.

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A SINGLE SWEEP CYCLIC VOLTAMMETRIC METHOD FOR DETERMINING THE RATE OF DECOMPOSITION OF IONIC SPECIES GENERATED ON A STATIONARY ELECTRODE AND UNDERGOING ECE MECHANISM

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(Received October 25, 1974)

Abstract. The method for the evaluation of rate of decomposition of ionic species in the following sequence of reactions $O + e \rightleftharpoons R$, $R \xrightarrow{k} A + B$ (product), $2A \rightarrow A_2$, $A_2 + ne \rightarrow A_2^{ne}$ is described and applied to the decomposition of 4-nitrobenzyl chloride anion radical. The value $75(\pm 25) \text{ sec}^{-1}$ thus obtained for k for 4-nitrobenzyl chloride anion is believed to be more accurate than the value 10 sec^{-1} reported earlier.

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MICROANALYSIS BY AMPLIFICATION: DETERMINATION OF PLATINUM AND URANIUM

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(Received April 15, 1974)

Abstract. Gravimetric amplification methods for minute quantities of platinum and uranium have been developed. The determination of platinum and uranium in as small an amount as 800 and 400 μg can be carried out with an accuracy of 3-4 and 2-3% respectively.

The amplification process for the determination of platinum and uranium can be automated by the addition of a known amount of chloroplatinic acid and uranyl nitrate till sufficient precipitate of PtCl_4 , 2AgCl and $\text{UO}_2(\text{OH})_2$ for measurement have been obtained respectively.

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STUDIES IN THE CHEMICAL CONSTITUENTS OF THE FRUITS OF CUCUMIS PROPHETARUM LINN

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(Received July 2, 1974; revised February 19, 1975)

Abstract. The isolation and characterisation of a new sterol, m.p. 146°C, and a new cucurbitacin, m.p. 240°C, provisionally named as propheterosterol and cucurbitacin Q1 respectively, have been reported in this communication from fresh and undried fruits of *Cucumis prophetarum*. A quantitative estimation of its amino acids have also been studied.

Short Communications

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REACTIONS OF DIAZENES

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(Received September 20, 1974; revised November 19, 1974)

The driving force for the isomerization to the thermodynamically more stable 5-membered heterocycle may be provided by release of ring strain. One may also envisage a direct formation of V, by the addition of the carbene to the resonance from III. We at this stage cannot decide in favour of either of the above stated, or other possibilities. More work needs to be done to learn about the mechanism of its formation. This, however, does not in any way minimize the utility and scope of this reaction.

Characterization of VI is based on its hydrolysis with quantitative amount of 0.5N NaOH to diethylhydrazodiformate, which was identified by its identical IR, R_f value on TLC, and the mixed melting point with authentic material, and its ethanolic

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**DETERMINATION OF THE PARTICLE SIZE
AND SPECIFIC SURFACE OF CRYSTAL-
LINE LEAD MONOXIDE**

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Biological Sciences Section

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CHEMOSTERILIZATION OF LABORATORY-REARED AEDES AEGYPTI (L) BY SUBSTITUTED— PHOSPHINE OXIDES AND PHOSPHORUS AMIDES

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(Received November 7, 1974; revised December 1, 1974)

Abstract. Toxicity and sterilizing activity of alkylating phosphine oxides were greater than nonalkylating phosphorus amides. Among phosphine oxides the activity appeared to decrease with increasing size of the radicals. Sulphur-containing phosphorus amides were much more effective sterilants.

Male mosquitoes were found to be more susceptible to sterilization than females and when both sexes were treated the effect was cumulative. Second instar larvae of *A. aegypti* (PCSIR strain) appeared to be more susceptible to these chemosterilants in both homologous series reported here.

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**IMMATURE STAGES OF PHRICODUS PAKISTANENSIS HAMID (HETEROPTERA:
PENTATOMIDAE) AND NOTES ON ITS BIOLOGY**

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(Received October 2, 1974; revised December 10, 1974)

Abstract. Immature stages of *Phricodus pakistanensis* are described and illustrated. Mating, oviposition and hatching are discussed.

THE SYMBIOTE OF THE MEMBRACID TRICENTRUS ASSAMENSIS VERSUS PATHOLOGICAL CELL-INCLUSIONS

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(Received December 13, 1974)

Abstract. *Tricentrus assamensis* can be considered a classical object for the study of symbiosis. Its symbiotic bacterium is the longest so far recorded. Whereas other germs occur solely as independent cell-inclusions here protoplasmic pieces can also contain the germ. As a result of autolysis both protoplasm and nucleus give rise to disintegration bodies. The nucleus with its nucleic acids, losing gelling property, gives rise to various forms of nuclear debris, which as cell-inclusions, have been mistaken for microorganisms. Thus there have been two types of pseudosymbiotes, mistaken as *Cicadomyces*, protoplasmic and nuclear disintegration bodies.

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SOME PARASITES OF CATS IN KARACHI

FATIMA MUJIB BILQEES and NEELOFER ISRAR

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(Received May 2, 1974; revised November 25, 1974)

Abstract. Six parasites of cats commonly found in Karachi are described. These include an ectoparasite *Ctenocephalus felis* Stile and Colins, 1930; and five endoparasites *Dipylidium caninum* Linnaeus, 1958; *Dipylidium sexcoronatum* Ratz, 1900; *Taenia hydatigena hydatigena* n. sub sp.; *Toxascaris leonina* Raillet and Henery 1911; and *Echinochasmus* sp. *Dipylidium sexcoronatum* is a new locality record. The species identification of the trematode belonging to genus *Echinochasmus* was not made due to unavailability of sufficient number of the specimens.

PREPARATION OF AMYLOGLUCOSIDASE BY SOLID SUBSTRATE FERMENTATION**M. A. QADEER and J. I. ANJUM***PSCIR Laboratories, Lahore 16*

(Received April 2, 1974; revised December 14, 1974)

Abstract. Brans of various cereals such as wheat, maize and gram, and rice husk were evaluated as substrate for mould growth for the biosynthesis of amyloglucosidase by the strains of *Aspergillus* and *Rhizopus* species. The culture extracts of all mould strains, when grown on various substrates, possessed amyloglucosidase activity of 1900-2200 units/g bran, 48 hr after spore inoculation. The use of wheat bran, however, was extensively studied for enzyme production. The optimum cultural conditions such as incubation time, thickness of bran layer, various diluents and their ratios to wheat bran and method of cooking (autoclaving and steaming) were determined. The use of spent wheat bran resulted in the increase of enzymic activity by both mould strains. The supplementation of wheat bran with various sources of carbohydrates or nitrogen including penicillin-waste mycelium did not improve the enzyme synthesis.

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ISOLATION AND PURIFICATION OF AMYLASE FROM RAT PANCREAS

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(Received April 4, 1974; revised November 21, 1974)

Abstract. The enzyme amylase was purified from rat pancreas. Three enzymatically active fractions were obtained upon chromatography on Amberlite IRC 50. One of these fractions was further separated into four isoenzymes. The mol. wt. of these were found to be 45,000, 33,110 and 16,220. The isoenzyme with 45,000 mol. wt. was crystallized and recrystallized. The specific activity of the crystalline isoenzyme was found to be 175, which is 3,000 times higher than the specific activity of the original homogenate.

TRANSLOCATION STUDIES WITH MONOCROTOPHOS IN PUMPKIN PLANTS BY GRANULE IMPREGNATION TECHNIQUE.

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(Received September 14, 1974; revised November 7, 1974)

Abstract. Studies were undertaken to investigate various aspects of translocation of Monocrotophos (Azodrin) residues in pumpkin plants following stem application (by granule impregnation). Larvae and adult beetles of *Epilachna dodecostigma* Muls. were used as test insects for bioassay. Results indicate that rapid translocation of insecticide occurs throughout the plant up to a distance of 24 ft. Granules of higher concentration were noted to translocate insecticide residues comparatively slowly compared with lower concentration granules. Exposure of insects to treated plants for 24 hr controlled the pests effectively only up to 5 days whereas 48-hr exposure provided good kill up to 11 days. It was also observed that younger plants were comparatively more efficient in translocation than older plants.

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AMINO ACID COMPOSITION AND NUTRITIVE VALUE OF RICE VARIETIES BASMATI-370 AND IR-6 GROWN IN PESHAWAR REGION

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(Received October 15, 1974; revised December 19, 1974)

Abstract. Rice varieties, Basmati-370 and IR-6, grown in the North West Frontier Province were analysed for their amino acid composition by one dimensional buffered filter paper chromatography. Polishing caused significant losses of isoleucine, phenylalanine and highly significant losses of methionine in IR-6 variety, while there was no significant loss of any amino acid in Basmati-370, but the net amount of all the essential amino acids, except lysine were significant in IR-6 than Basmati-370. Polished and unpolished forms of IR-6 contained higher ratio of NPU, apparent and true digestibilities and biological values than Basmati-370.

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**ANTIFERTILITY PROPERTIES OF THE NONSAPONIFIED FRACTION OF SEEDS
OF PSORALIA CORYLIFOLIA IN THE ADULT FEMALE RATS**

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(Received July 3, 1974)

Abstract. Nonsaponified fraction of seeds of *Psoralia corylifolia* when administered in the dosage of 60 and 90 mg/day shows antifertility properties in the adult rats. This is attributed to the failure of implantation and resorption in early or late stages of pregnancy.

Technology Section

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THE EFFECT OF NITROGEN AND PHOSPHORUS ON THE YIELD AND EXTRACTABILITY OF PROTEIN FROM TRIFOLIUM ALEXANDRIUM

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(Received August 21, 1974; revised November 19, 1974)

Abstract. A study was conducted to determine the effect of nitrogen and phosphorus fertilizers on the yield of dry matter and extractability of protein from *Trifolium alexandrium*. Application of nitrogen, phosphorus and nitrogen-phosphorus mixture increased the yield from 118.00 to 124.20, 127.80 and 132.0 ton/ha, respectively. Extractability of protein increased from 1977 to 2269 kg/ha after the application of fertilizers containing nitrogen and phosphorous.

ISOLATION AND IDENTIFICATION OF MUSTARD SEED CAKE DETOXIFYING MICROORGANISMS*

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(Received November 6, 1974)

Abstract. Microorganisms capable of growing on mustard seed cake were isolated from air and identified. Three strains of mold (*A. niger*, *A. flavus* and *Mucor mucedo*) and two of bacteria (*Bacillus subtilis* and *Bacillus subtilis* var *niger*) grew well when mustard seed cake was the only source of carbon. *Aspergillus flavus* also hydrolysed Sinigrin (a toxic substance present in the cake).

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EXTRACTION OF ALUMINA FROM ZIARAT LATERITE BY ALKALINE LEACHING

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(Received September 25, 1973; revised November 21, 1974)

Abstract. Ziarat laterite has been subjected to leaching with caustic soda. The effects of (i) alkali concentration, (ii) temperature, (iii) duration of attack, and (iv) solid-liquid ratio; have been studied and optimum conditions for the maximum extraction of Al_2O_3 have been worked out. It has been observed that the extraction, which proceeds rapidly at the beginning of the reaction, slows down afterwards due to the formation of an insoluble complex.

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FIBRE AND STAPLE CRIMP IN CARPET WOOLS

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(Received September 12, 1973; revised December 10, 1974)

Abstract. In addition to the staple crimp frequency, the fibre crimp frequency of various types of fibre viz true wool, heterotypical and medullated has been determined in a series of Pakistani carpet wools. The interrelationships of fibre crimp frequency with staple crimp frequency, diameter and length have been examined and results contrasted with known findings on fine wools. It has been revealed that although correspondence between staple crimp frequency and the usual primary fibre crimp frequency is negligible, a secondary crimp of a larger amplitude corresponds in varying degrees with the staple crimp, especially in the case of medullated fibres. A significant negative relationship is found to exist between fibre crimp frequency and diameter, provided that the range of diameter of fibres under examination is wide enough. In certain cases fibre crimp frequency has been found to have a positive relationship with fibre length.

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A QUALITATIVE SURVEY OF PAKISTANI TURPENTINE OIL

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(Received June 24, 1974; revised December 24, 1974)

Abstract. Oleoresin samples from various compartments, and altitudes of Dadar, Batrasi and Kahuta forests were collected and steam distilled. The turpentine oil obtained was analysed using GLC. The yield of the oil varied from 15 to 24%; the pinene-content 43-69%; camphene 1-10%; Δ^3 -carene, 26-52% and longifolene 0-12%. No direct relationship between the altitude and the pinene-content could be established.