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Physical Sciences Section

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THE ISOLATION AND TOTAL SYNTHESIS OF CADABICINE METHYL ETHER

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(Received August 15, 1991; revised November 7, 1992)

A new spermidine alkaloid, cadabicine methyl ether (1) has been isolated from the stem bark of two caparidaceous plants, *Cadaba farinosa*, Forssk., and *Crataeva nurvala* Bunch- Ham, using the same isolation procedure. The structure of (1) was determined by spectroscopic studies of the alkaloid and its N-acetyl derivative and confirmed by its total synthesis.

Key words: *Cadaba farinosa*, Alkaloid, Isolation, Synthesis.

ORGANO MERCURY COMPOUNDS OF BARBITURIC ACID

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(Received November 23, 1991; revised November 21, 1992)

Organo mercury compounds of barbituric acid were synthesized and characterized. The complexes contain two and one water molecules in the methyl and phenyl containing compounds, respectively. The ΔE and $\log \sigma_0$ values are evaluated and discussed. These complexes are of tetrahedral structure and of semi-conducting behaviour.

Key words: Mercury, Barbituric acid, Conductivity, Thermal analysis.

PHOTOLYTIC DECOMPOSITION OF THE PERIODITE ION IN AQUEOUS SOLUTION

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(Received January 23, 1991; revised August 10, 1992)

The photolytic decomposition of an aqueous solution of the periodate ion (IO_4^-) at $\text{pH } 6.6 \pm 0.2$ was studied using a 253.7nm wavelength for photolysis. The quantum yields ϕ for the disappearance of IO_4^- and for the formation of products IO_3^- and O_2 were determined experimentally in Argon saturated deaerated, N_2O saturated, and deaerated scavenger containing systems. The observed values are $\phi (-\text{IO}_4^-) = 0.73 \pm 0.01$, $\phi (\text{IO}_3^-) = 0.74 \pm 0.01$ and $\phi (\text{O}_2) = 0.38 \pm 0.02$.

Key words: Photolytic decomposition, Aqueous solution, Periodate ions.

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SYNTHESIS AND BIOLOGICAL ACTIVITY OF 3,5-DISUBSTITUTED RHODANINES. *Part -IV*

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(Received November 11, 1991; revised October 11, 1992)

Substituted rhodanines (I) _{a-c} reacted with halo compounds, aromatic aldehydes, ketones, anhydrides and amines to afford compounds (II-V)a-c. The antibacterial activities of all the synthesized derivatives have been investigated.

Key words: Synthesis, Biological activity, 3,5-Disubstituted rhodanines.

TEMPERATURE PROGRAMME REDUCTION OF ALKALI DOPED EUROPT-I (Pt/SiO₂ CATALYST)

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(Received July 11, 1991; revised December 16, 1992)

The technique of temperature programmed reduction (TPR) of alkali doped Europt-I (Pt/SiO₂ catalyst), was used to observe the catalysts at various stages of preparation sequence. The significant changes might be produced in the structure/properties of the catalyst by the alkali dopant. Observed decrease in the reducible area with increasing alkali concentration could be due to loss of total surface area.

Key words: Temperature programmed reducibility, Pt/SiO₂ Catalyst, Alkali doping.

Biological Sciences Section

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SEASONAL VARIATIONS IN THE VOLUME OF THE HAEMOLYMPH AND BODY WEIGHT OF THE HORSESHOE CRAB, *TACHYPLEUS GIGAS* (MULLER)

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(Received May 14, 1991; revised December 16, 1992)

The changes in volume of haemolymph of the horseshoe crab, *Tachypileus gigas* (Muller) were more pronounced in females of size above 160 mm with maximum values in size group 241-260 mm. In males, the variations in the volume of haemolymph was not significant in sizes between 121-140 mm. An inverse relationship was observed between the volume of haemolymph and salinity of the environment. Maximum volume of haemolymph (57.3 ml) in females was observed when the salinity of the environment was low in October whereas, minimum (30 ml) at higher salinities during summer and post flood periods. The body weight of the crab was also found to be affected by the fluctuations in salinity. During flood period (Oct. - Nov.) average body weight of the crab increased by 9.6 % (size group V), 6.4 % (size group VI) and 9.8% (size group VII) in case of female, where as males showed only 3.09 % higher body weight. During post flood period (Dec. - Jan.), the average body weight decreased by 5.45; 7.2 and 18.2 % in size group V, VI and VII respectively in females and 6.1 % in males. The variations in body weight with salinity were more pronounced in females than in males, during different seasons.

Key words: Seasonal variations, Haemolymph, Body weight, *Tachypileus gigas*.

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PESTICIDE RESIDUES IN FOODSTUFFS IN PAKISTAN-ORGANOCHLORINE, ORGANO-PHOSPHORUS AND PYRETHROID INSECTICIDES IN FRUITS AND VEGETABLES

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(Received September 18, 1991; revised November 19, 1992)

Organochlorine, organophosphorus and pyrethroid pesticides were monitored in samples of fruits and vegetables procured from the wholesale market of Karachi during July, 1988 and June, 1990. A total of 250 samples were screened out of which 93 samples were found to be contaminated with a variety of pesticides. Forty five samples have been found to contain residues above the maximum residue limits (MRL's) proposed by FAO/WHO while forty eight samples contained residues well within permissible limits. In remaining samples, no pesticide residue could be detected.

Key words: Food stuffs, Pesticide residues, Gas chromatography.

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SCREENING OF PLANTS FOR ECDYSONES (FAMILIES AMARANTHACEAE AND CHENOPODIACEAE)

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(Received July 31, 1991; revised November 11, 1992)

Forty two species representing ten genera of Amaranthaceae and six genera of Chenopodiaceae families have been screened for ecdysones, of which eleven species of Amaranthaceae and three of Chenopodiaceae were found positive for ecdysones. Screening of ecdysones was based on the use of TLC and UV of the plant extracts and their comparison with that of authentic ecdysterone.

Key words: Ecdysones, Amaranthaceae, Chenopodiaceae, Ecdysterone.

STUDIES ON PEAR JUICE

Part-I. Preparation of Enzymatically Clarified Juice and Its Concentration to Produce High Degree Brix Concentrate

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(Received July 9, 1990; revised December 2, 1992)

Three varieties of pears Leconte, Kieffer and Batang were analyzed for their physio-chemical composition. Juice yield was found to be 83.8, 81.7 and 83.6% respectively in Leconte, Kieffer and Batang. Maximum ascorbic acid was found in the Leconte and minimum in the Kieffer. Pectolase enzyme was used to obtain clear pear juice. Physio-chemical changes during concentration of the juice were noted. The clear pear juice and concentrate was organoleptically evaluated. On overall quality, juice and concentrate obtained from Leconte was rated superior.

Key words: Pear varieties, Juice concentrate, Enzymatic clarification, Sensory evaluation.

Short Communication

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Nutritional Evaluation of Some of the Traditional Foods of the Rural Areas of Pakistan

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(Received November 8, 1990; revised December 21, 1992)

Twelve dishes of traditional foods were analysed. "Lassi"

Short Communication

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**Amino Acid Composition of *Grewia asiatica*
(Falsa) as Index of Juice Quality**

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Technology Section

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VOLATILIZATION OF BORIC OXIDE FROM BOROSILICATE GLASSES

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(Received June 1, 1992; revised November 18, 1992)

Volatilization studies of three borosilicate glasses having B_2O_3 (wt.%) 3.14, 5.88 and 8.79% have been carried out in clay grog crucibles at 1400° , 1450° and 1500° for 10, 20, 30 and 40 hr. of heating in a gas fired furnace. The percent loss of boric oxide due to volatilization has been determined by chemical analysis of the melt. It has been observed that loss is directly proportional to temperature, time and concentration of boric oxide in the glass. The loss of B_2O_3 due to volatilization is affected by the formation of scum at the surface of melt which is mainly silica. Results have been drawn as percent loss versus time (t) (hr) and $\sqrt{t}$ (hr).

Key words: Volatilization from glasses, Boric oxide, Borosilicate glasses.

PRODUCTION OF RAW STARCH HYDROLYZING AMYLOLYTIC ENZYMES BY *STREPTOCOCCUS BOVIS* PCSIR - 7B

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(Received June 16, 1992; revised November 3, 1992)

Thirty strains of *Streptococci*, isolated from bovine rumen were screened for raw starch digesting activity. Of all the cultures tested *Streptococcus bovis* PCSIR -7B produced the best results (1.50 IU/ml). Alpha amylase production was maximum in medium -M₃ (3.8 IU/ml). Corn starch and peptone were the best sources of carbon and nitrogen for the enzyme production. Cereal starches were hydrolysed more readily as compared to root starches.

Key words: Bovine, Rumen, Hydrolysis.