

PAKISTAN JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Vol. 19, No. 1, February 1976

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Published bimonthly by

PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
KARACHI

Physical Sciences Section

Pakistan J. Sci. Ind. Res., Vol. 19, No. 1, February 1976

FORMATION OF SULPHUR-SULPHUR BONDS BY THE NUCLEOPHILIC ATTACK ON SULPHENYL HALIDES AND THIOCYANATES

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(Received February 6, 1975; revised May 20, 1975)

Abstract. Aromatic sulphenyl chlorides were treated with sodium azide to prepare the corresponding sulphenyl azides in the presence of nitrene trapping agents, i.e. dimethyl sulphoxide, cyclohexene and norbornylene. No expected adduct was obtained but instead the corresponding disulphides were found in quantitative yields. Similar results were obtained when sulphenyl thiocyanate was treated with sodium azide. Disulphides did not either react with sodium azide or iodine azide. Sulphenylsodium salt also gave the corresponding disulphide in very high yield.

ELECTROOXIDATION OF SILVER(I) NITRATE AND SILVER(I) PERCHLORATE IN THE PRESENCE OF 4,4'-DIMETHYL-2,2'-BIPYRIDYL; 2,2',2''-TERPYRIDYL; 5,5'-DIBUTYL-2,2'-BIPYRIDYL AND 2,2'-BIQUINOLYL IN ACETONITRILE

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(Received July 29, 1975)

Abstract. Electrooxidation of silver(I) nitrate and silver(I) perchlorate in the presence of 4,4'-dimethyl-2,2'-bipyridyl and 2,2',2''-terpyridyl enable the preparation and isolation of AgL_2 type complexes where silver is stabilised in Ag^{2+} state. Whereas the ligands 5,5'-dibutyl-1,2,2'-bipyridyl and 2,2'-biquinolyl, though give indications where silver(I) is converted to silver(II) state, but the isolation of complexes was not successful. Particularly for 2,2'-biquinolyl, which due to its low solubility in acetonitrile created hindrance even in obtaining conclusive evidence in terms of coulometric determinations for silver(I) to silver(II) conversion.

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**SHELF-LIFE AND STABILITY STUDIES OF HEXAMMINECOBALT(III)
TRICARBONATOCOBALTAE(III)**

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(Received December 14, 1973; revised August 4, 1975)

Abstract. Hexaminecobalt(III) tricarbonatocobaltate(III) as titrant keeps its factor fairly constant over a reasonable period. Hydrochloric acid from 1 to 8N, sulphuric acid from 0.5 to 10.0N, acetic acid from 10 to 80 and 2 to 10% and perchloric acid have proved quite suitable media for redox studies with this titrant.

STUDIES ON THE FORMAL REDOX POTENTIAL VALUES OF $\text{Co}^{3+}/\text{Co}^{2+}$ REGARDING THE VOLUMETRIC USE OF HEXAMMINECOBALT(III) TRICARBONATOCOBALTATE(III)

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(Received December 29, 1973; revised June 9, 1975)

Abstract. The values of the measured formal redox potential of $\text{Co}^{3+}/\text{Co}^{2+}$ system in sulphuric, hydrochloric, perchloric and acetic acids, with regard to the possible use of $\text{Co}(\text{NH}_6)_3\text{Co}(\text{CO}_3)_3$ as a volumetric oxidimetric titrant, have been reported.

Short Communication

Pakistan J. Sci. Ind. Res., Vol. 19, No. 1, February 1976

DETERMINATION OF PEROXYDISULPHATE BY EDTA

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(Received May 28, 1975)

Biological Sciences Section

Pakistan J. Sci. Ind. Res., Vol. 19, No. 1, February 1976

GENERA OF SUBFAMILY LINDENIINAE (GOMPHIDAE ANISOPTERA : ODONATA) WITH DESCRIPTIONS OF TWO NEW SPECIES FROM PAKISTAN

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(Received August 5, 1975; revised October 18, 1975)

Abstract. The distribution and amended characters of the genera *Ictinogomphus* Cowley and *Gomphidia* Selys are included in this paper. Detailed description of two new species, viz. *Ictinogomphus alaquopectus* and *Ictinogomphus pugnovittatus* and modified characters and new record of distribution of *Gomphidia t-nigrum* Selys are given.

**EFFICACY OF METHYL EUGENOL AS A MALE ATTRACTANT FOR DACUS ZONATUS
(SAUNDERS) DIPTERA: TEPHRITIDAE***

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(Received July 1, 1975)

Abstract. *Dacus zonatus* (Saunders) is a serious pest of guava in Pakistan which is responsible for 25–50% loss of fruit. The efficacy of methyl eugenol as an attractant alone and in different combinations with toxicant, protein hydrolysate, and sugar was explored for the males of this species. A solution of 85% methyl eugenol + 5% naled + 10% sugar (v/v/v) was found to be the best combination for attracting and killing the flies for a longer period.

**HISTOLOGICAL EXPRESSION OF IN VITRO GROWTH OF EXPLANTS FROM
PARTHENOCARPIC NONPARTHENOCARPIC SYCONIA OF
FICUS CARICA L., CV. KING**

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(Received June 6, 1972; revised July 12, 1975)

Abstract. *In vivo* growth of both parthenocarpic (first crop) and pollinated (second crop) syconia of *Ficus carica* cv. King proceeded in three stages, two stages of rapid growth (period I and III) separated by a period of slow growth (period II). To obtain information concerning relative sensitivity to growth regulators of syconium tissues of each crop during development, explants were grown in culture media with and without growth regulators. The regulators used were 2,4-dichlorophenoxy acetic acid, kinetin and gibberellic acid, each at two concentrations predetermined as suitable. After 4 weeks of *in vitro* growth microtome sections of these were observed for the evidence of types of histological growth. The wound response was formation of periderm, the extent of which was more in 2,4-D treatments. Some differences were observed in explant growth from two types of syconia at the same stage of development. These differences with their probable significance are described.

Technology Section

Pakistan J. Sci. Ind. Res., Vol. 19, No. 1, February 1976

DETERMINATION OF FAT CONTENT IN GHEE, HYDROGENATED OILS, BUTTER AND POWDERED MILK BY IR SPECTRA

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(Received July 11, 1975; revised September 25, 1975)

Abstract. A quick method, using IR spectrophotometry has been investigated for the analysis of (%) fat content in ghee, hydrogenated oils (substituted-ghee), butter and powdered milk. To avoid long procedure of chemical analysis for the determination of fat, this method uses simple preparation of solutions in carbon tetrachloride, under controlled physical conditions, which can be directly used for IR studies. The quantitative estimation has been made by using the 1745 cm^{-1} absorption frequency due to the carbonyl group of glycerides. Correlation of the results obtained by this method as compared with the chemical analysis shows an average variation of $\pm 1\%$ for total fat-content.

STANDARDIZATION OF A PROCESS FOR THE PRODUCTION OF MANGO-FLAVOURED MILK

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(Received March 19, 1975; revised August 11, 1975)

Abstract. A standardized process was developed for the production of mango-flavoured milk in Pakistan. Powdered skim milk, fresh mango pulp and canesugar were used as basic ingredients. 16 out of 50 combinations of pectin, gelatin and guar-gum were tested as stabilizers. The effect of room (80–95°F) and refrigerator (40–45°F) storage on their important physicochemical and organoleptic characteristics was studied. Maximum shelf-life was 348 hr at 40–45°F in contrast to 25½ hr at 80–95°F. Gelatin proved best as a stabilizer while the pectin blends were better organoleptically. Lastly, 4 recipes for the preparation of mango-milk blends are given.

UTILIZATION OF CELLULOSIC WASTES

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(Received September 19, 1974; revised September 8, 1975)

Abstract. Reduction in the particle size of bagasse and rice husk from 60–120 mesh resulted in an increase in the release of sugars from 0.6–6.0 mg/g. Heating of the samples at 125°C for 30–40 min released maximum amount of sugar 15.8 and 5.93 mg/g from bagasse and rice husk respectively. Soaking in 2N HCl and 2% NaOH for 1 hr at ambient temperature released 2.8 and 1.85 mg/g sugar from bagasse and rice husk respectively. Bagasse samples previously heated at 125°C for 40 min when refluxed with 2N HCl for 40 min gave maximum release of sugar, i.e. 282.33 mg/g.

Pakistan J. Sci. Ind., Res., Vol. 19, No. 1, February 1976

Short Communication

EFFECT OF EXTRACTION TECHNIQUES ON THE EXTRACTION OF PROTEIN FROM TRIFOLIUM ALEXANDRINUM

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(Received October 15, 1974; revised September 25, 1975)

Pakistan J. Sci. Ind. Res., Vol. 19, No. 1, February 1976

CONSTRUCTION OF MOLECULAR ORBITAL SEQUENCE OF SILVER(II)-BIS-TRIPYRIDYL SYSTEM

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(Received July 29, 1975)

Abstract. Molecular orbital sequence of silver (II)-bistripyridyl system has been determined on the basis of symmetry characters of the molecule. Effort has been made to explain the symmetrical octahedral structure.