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Physical Sciences Section

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NITRATION STUDIES IN RESERPINE

SALIMUZZAMAN SIDDIQUI and MOHAMMAD ATAULLAH KHAN

H. E. J. Postgraduate Institute of Chemistry, University of Karachi, Karachi 32

(Received September 17, 1975)

Abstract. In the context of studies in the correlation of structure and activity three isomers of mononitroreserpine have been prepared and their structures established through chemical and spectral techniques. The results of pharmacological action of two of these isomers have been reported.

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CONFIRMATION OF STABILITY OF DIMETHYLAMINO GROUP TO WALLACH REARRANGEMENT¹

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(Received August 9, 1975)

Abstract. 4-(Dimethylamino)phenylazoxynaphthalene resists the formation of photochemical or acid catalysed Wallach rearrangement product, the hydroxyazo derivative due to an unfavourable substituent effect by the strongly electron-releasing $N(CH_3)_2$ group against substitution into the naphthalene ring. It is, presumably, also the result of excitation of dimethylamino group rather than that of the azoxy group.

INFLUENCE OF DIELECTRIC CONSTANT AND IONIC STRENGTH ON THE SPECIFIC RATE CONSTANT OF BROMIDE-PERSULPHATE REACTION

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(Received March 28, 1975 ; revised May 22, 1975)

Abstract. Rates of reaction between persulphate and iodide ions were studied at various concentrations of the reacting ions and at various dielectric constant (D) of aqueous ethanol mixtures at 50°C. This reaction is found to be second order and a mechanism is suggested for the reaction.

From the plot of $\log k''_0$ against $1/D$, the value of $r_{\neq}$ and r_{AB} , the radii of the transient species for single and double sphere models are calculated. Comparison of the experimental and theoretical values of $r_{\neq}$ and r_{AB} shows that the description of the transient species can best be explained by the single sphere model.

**THE STABILITY CONSTANTS OF Co(II) AND PYRIDINE-2-AZO-p-DIMETHYL ANILINE
1 : 1 COMPLEX IN MIXED SOLVENTS***

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(Received July 29, 1975)

Abstract. The stability constants and thermodynamic parameters of 1:1 complex of cobalt(II) and pyridine-2-azo-*para* dimethyl aniline has been studied at three temperatures in alcohol-water mixtures keeping alcohol in low-mole fractions. Effort has been made to explain these results on the basis of structuring-destructuring effect of cosolvent in water. It was found that methanol has ordering effect on bulk solvent up to 3.31 % mole fraction.

ELECTRO-OXIDATION OF SILVER (I) NITRATE AND SILVER (I) PERCHLORATE IN THE PRESENCE OF 2,2'-BIPYRIDYL IN ACETONITRILE***M. A. A. USMANI***Department of Chemistry, University of Karachi, Karachi 32***D. B. SCAIFE***Department of Chemistry, The City University of London, London*

(Received July 29, 1975)

Abstract. Detailed polarographic study of silver(I) nitrate and silver(I) perchlorate were performed in acetonitrile solvent in the presence of 2,2'-bipyridyl. Most interesting part of the present work, apart from preparation and isolation of bis(2,2'-bipyridyl)silver(II) nitrate-perchlorate and bis(2,2'-bipyridyl)silver(II) diperchlorate, has been the finding that the electroactive species is ML rather than ML₂.

MICROBIAL CHEMISTRY

Part I. Isolation and Characterization of Gliotoxin, Ergosterol, Palmitic Acid and Mannitol—Metabolic Products of *Trichoderma Hamatum* Bainier

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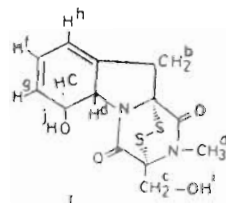
Abstract. The metabolic products of *Trichoderma hamatum* Bainier are described for the first time. It has been shown that this mould, when grown on a semisynthetic medium, produces the compounds mentioned in the title.

During screening of fungi from indigenous sources a strain of *Trichoderma* was isolated which was identified¹ as *Trichoderma hamatum* Bainier. A survey of the literature showed that although this mould was first described² in 1913, its metabolic products have not been investigated so far. We, therefore, undertook this study.

Trichoderma hamatum Bainier was grown on Findlay's medium enriched with carrot extract³ and incubated at 24°C for 16 days. The mycelium was separated from the broth by filtration and then both were worked up separately.

Signals at δ 5.67, δ 5.9 and δ 6.0 were compatible with the three olefinic protons (h, f and g).

On the basis of above analytical and spectral data, compound C was identified as Gliotoxin (I).



QUANTITATIVE THIN LAYER CHROMATOGRAPHIC ESTIMATION OF TETRACYCLINE ANTIBIOTICS*†

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(Received April 26, 1975, revised August 7, 1975)

Abstract. Determination of tetracycline antibiotics by spectroscopic methods is erroneous, The TLC method with 1, 1-dichloroethane-chloroform-ethylacetate-methanol system was found most suitable for the separation of these antibiotics.

Biological Sciences Section

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PRODUCTION OF CALCIUM GLUCONATE BY *ASPERGILLUS NIGER* IN 50-L FERMENTER

M.A. QADEER, M. AFZAL BAIG and O. YUNUS

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(Received December 24, 1974 ; revised May 22, 1975)

Abstract. The production of calcium gluconate by *Aspergillus niger* in 50-l glass-stainless steel fermenter was studied. The optimum levels of glucose concentration and size of inoculum were determined for maximum conversion of glucose to gluconic acid as calcium salt. Rates of aeration (500 ml l/m) and agitation (200 rev/min), however, remained unchanged.

Short Communications

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STUDIES ON THE QUANTITATIVE DETERMINATION AND PHOTODEGRADATION OF EPHEDRINE

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Technology Section

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STUDIES ON THE ESSENTIAL OILS OF THE PAKISTANI SPECIES OF THE FAMILY UMBELLIFERAE

Part I. *Trachyspermum ammi* (L) Sprague (Ajowan) Seed Oil

MUHAMMAD ASHRAF and MUHAMMAD KHURSHID BHATTY

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(Received August 21, 1974; revised May 21, 1975)

Abstract. The essential oils of the fresh large and small seeds of *Trachyspermum ammi* (ajowan) grown in Pakistan have been characterised and studied for the first time. The irrespective yield of oils is 3.5 and 5.2% and composition by GLC α -pinene (0.33, 0.63%), camphene (0.63, 0.56%), β pinene (1.24, 1.56%), Δ^3 -carene (0.42, 0.80%), limonene (0.25, 2.25%), γ -terpinene (20.35, 18.70%), *p*-cymene (23.78, 20.80%) and phenols (53.0, 54.70%). The phenols, as determined by column chromatography, are composed of thymol 45.20 and 48.50% and carvacrol 6.80 and 4.50% respectively. Both the yield and the composition vary according to the locality of cultivation and the storage time of the seed.

STUDIES ON THE ESSENTIAL OILS OF THE PAKISTAN SPECIES OF THE FAMILY UMBELLIFERAE

Part II. *Foeniculum Vulgare* Miller (Fennel) Seed Oil

MUHAMMAD ASHRAF and MUHAMMAD KHURIHID BHATTY

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(Received September 25, 1974)

Abstract. The essential oil of the *Foeniculum vulgare* (fennel) seed grown in Pakistan has been characterised and studied for the first time. The physicochemical characteristics and the chemical composition of the indigenous oil are comparable with those of the oils produced by other countries and qualify it as an item of considerable commercial importance. The chemical composition of the fennel seed oil by GLC is : α -pinene (3.00%), camphene (0.65%), α -phellandrene (0.44%), limonene (4.56%), fenchone (10.20%), methyl chavicol (3.50%), anethole (74.85%), anisaldehyde (1.80%) and *p*-anisic acid (1.00%).

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FABRICATION OF A NEW TYPE OF SUPERCONDUCTING JUNCTION

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(Received September 17, 1975)

Abstract. The phenomenon of Josephson tunneling is being used for the detection of low voltages at liquid helium temperature using different types of Josephson junctions such as the tunnel junction, the weak link or superconducting bridge and point contact. A new technique similar to the point contact type has been developed which is comparatively more consistent in its characteristics even after subjecting it to a number of thermal cycles between liquid helium and room temperatures.

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IMPORTANT INSECT PESTS OF SUMMER LEGUMES IN THE PUNJAB*

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