Pakistan J. Sci. Ind. Res., Vol. 14, Nos. 1–2, February–April 1971

COMPARATIVE STUDIES OF PROTON MAGNETIC RESONANCE OF SOME ISOCOUMARINS AND ISOCARBOSTYRYL-4-CARBOXYLIC ACID. PART I

A. Kamal, Nilofer Kazi, Tahira Begum, M. Afroze Khan and Asaf A. Qureshi

PCSIR Laboratories, Karachi 39

(Received October 23, 1970)

The PMR studies of isocoumarin-4-carboxylic acid (I), methyl isocoumarin-4-carboxylate (II), 7-methoxy-isocoumarin-4-carboxylic acid (III), methyl 7-methoxy isocoumarin-4-carboxylate (IV), 7-methoxy-3,4-dihydroisocoumarin (V), 6,8-dimethoxy isocoumarin (VI) and isocarbostyryl-4-carboxylic acid (VII) have been described.

Pakistan J. Sci. Ind. Res., Vol. 14, Nos. 1–2, February–April 1971

COMPARATIVE STUDIES OF PROTON MAGNETIC RESONANCE OF SOME DIHYDROPYRIDINES AND TRITHIANS. PART II

A. Kamal, Rafia Akhtar, Tahira Begum, M. Afroze Khan and Asaf A. Qureshi

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(Received November 3, 1970)

The PMR of 2,6-dimethyl-3,5-diethoxycarbonyl-4-formyl-1,4-dihydropyridine (I), 2,4,6-trimethyl-3,5-diethoxycarbonyl-1,4-dihydropyridine (II), 2,4,6-trimethyl-3,5-diethoxycarbonyl-4-propyl-1,4-dihydropyridine (III), 2,6-dimethyl-3,5-diethoxycarbonyl-4-(4′-methoxyphenyl)-1,4-dihydropyridine (IV), 2,6-dimethyl-3,5-diethoxy-carbonyl-4-(3′-methoxy-4′-hydroxyphenyl)1,4-dihydropyridine (V), 2,6-dimethyl-3,5-diethoxycarbonyl-4-styryl-1,4-dihydropyridine (VI), 2,6-dimethyl-3,5-diethoxycarbon-4-furyl-1,4-dihydropyridine (VII), 2,4,6-tri-(4′-methoxyphenyl)-1,3,5-trithian (VIII) and 2,4,6-tri-(2′,3′-dimethoxyphenyl)-1,3,5-trithian (IX) has been studied.

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COMPARATIVE STUDIES OF PMR SPECTRA OF SOME DIHYDROPYRIDINES. PART III

A. Kamal, Tahira Begum, M. Afroze Khan and Asaf A. Qureshi

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(Received November 13, 1970)

Comparative PMR studies of the 2,6-dimethyl-3,5-diethoxycarbonyl-4-(phenyl)-1,4-dihydropyridine (I), 2,6-dimethyl-3,5-diethoxycarbonyl-4-(2′-chlorophenyl)-1,4-dihydropyridine (II), 2,6-dimethyl-3,5-diethxycarbonyl-4-(3′-hydroxyphenyl)-1,4-dihydropyridine (III), 2,6-dimethyl-3,5-diethoxycarbonyl-4-(4′-nitrophenyl)-1,4-dihydropyridine (IV), 2,6-dimethyl-3,5-diethoxy-carbonyl-4-(3′,4′-dimethoxyphenyl)-1,4-dihydropyridine(V), 2,6-dimethyl-3,5-diethoxycarbonyl-4-(α-naphthyl)-1,4-dihydropyridine (VI) are described.

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COMPARATIVE STUDIES OF PMR SPECTRA OF SOME SUBSTITUTED DIINDOLYL METHANE SERIES. PART IV

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(Received November 13, 1970)

Comparative PMR studies of diindolyl-3-methane (I), (3′-nitrophenyl)-diindolyl-3-methane (II), (4′-nitrophenyl)-diindolyl-3-methane (III), (4′-methoxyphenyl)-diindolyl-3-methane (IV), (3′, 4′-dimethoxyphenyl)diindolyl-3-methane (V), (2′-hydroxyphenyl)diindolyl-3-methane (VI) and (α-naphthyl)diindolyl-3-methane have been described here.

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ACTION OF CARBON TETRACHLORIDE VAPOUR ON SULPHIDES

Part II.—CuS and ZnS

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(Received May 27, 1970; revised September 19, 1970)

Carbon tetrachloride vapour reacted directly with cupric sulphide according to $2CuS + CCl_4 = 2CuCl_2 + CS_2$. Some elementary sulphur was formed due to the decomposition of cupric to cuprous sulphide. At the optimum temperature of 500°C, yield of CS_2 was 80%, together with about 20% of elementary sulphur. No side reactions were noted.

With zinc sulphide, the reaction followed the course $2ZnS + CCl_4 = 2ZnCl_2 + CS_2$; but this was accompanied by the (unexpected) decomposition of carbon tetrachloride itself. This produced unsatisfactory results up to 400°C mainly due to the formation of sulphur chlorides, which apparently decomposed by 500°C. At this temperature (optimum), yield of CS_2 was 85–90%. The remaining sulphur was believed to be adsorbed in the carbon formed by decomposition of the tetrachloride.

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ACTION OF CARBON TETRACHLORIDE VAPOUR ON SULPHIDES

Part III.—Hydrogen Sulphide

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(Received June 27, 1970; revised October 31, 1970)

Reaction between hydrogen sulphide and carbon tetrachloride vapour is unsatisfactory at low temperatures. At high temperatures two reactions take place: (i) $2H_2S+CCl_4=CS_2+4HCl$, and (ii) $H_2S+Cl_2=2HCl+\frac{1}{2}S_2$. The latter reaction is believed to be through the decomposition of carbon tetrachloride into other compounds and chlorine. The reaction is also dependent on the rate of flow of H_2S (even if the carbon tetrachloride vapour was in excess) and can be considerably improved by using suitable catalysts.

At 870°C in the absence of any catalyst about 40% of the H_2S escaped unreacted, with only 22% of it being converted to CS_2 and about 29% of free sulphur. With asbestos powder as the catalyst the formation of sulphur can be very much suppressed as well as the proportion of unreacted H_2S and consequently the total conversion to CS_2 was 71.5% (together with 12% of sulphur). Compared to this with active charcoal as catalyst, CS_2 yield was 57.6% with 20% unreacted H_2S. About 15% of the sulphur is believed to remain adsorbed on the catalyst.

The reaction in presence of asbestos is believed to have commercial possibilities for production of CS_2.

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EFFECT OF HYDROPHILIC SURFACES ON THE INTIMATE PROPERTY OF WATER

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(Received June 8, 1970)

Precise measurements of thermal expansion of columns of dilute solutions of two long-chain polymers have been carried out with various concentrations, ranging from 0 to 500 ppm polyox, in the temperature range between -2°C and 10°C. It is found that there occurs a definite shift of the point of maximum density of water on the addition of a very small quantity of polyox in water. The maximum lowering of the point of maximum density of warer to 1.7°C occurs at 40 ± 10 ppm of polyox, with an increase of about 1% in the absolute density of water at the point of maximum density.

It is tentatively suggested that the water molecules are able to arrange themselves in an orderly way around the polymer molecules, presumably forming a skin around the polymer chains. This ordering of water molecules, its range and depth, is dependent on the specific concentration and upon the molecular weight of polymer. An estimate of the effective depth of ordering is made, which comes out to be of the order of 300 A° to 400 A°.

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VISCOSITIES OF DILUTE POLYMER SOLUTIONS: SIGNIFICANCE OF THE MARK-HOUWINK CONSTANTS

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(Received May 22, 1970)

Constants K_m and a of the Mark-Houwink equation, $[\eta]=K_m.M^a$; are related to the polymer dimension in solution. These two parameters, therefore, can be used to evalute the dimension of polymers. Two methods of estimating the Flory K from values of K_m and a for polystyrene, polymethylmethacrylate, bisphenol A polycarbonate and amylose are verified. These methods of evaluation of K seem to apply for flexible polymers and suggest that K is independent of solvent power.

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ESR SPECTRA OF CATION AND ANION OF AROMATIC HYDROCARBONS

Proton Hyperfine Splitting and Electron Density Relationship*

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(Received April 14, 1970)

Some features of the McConnell, Colpa–Bolton and Giacometti–Nordio–Pavan equations for A^H, the proton hyperfine splitting in the ESR spectra of cation and anion radicals of aromatic (alternant) hydrocarbons are explored. An extended Huckel molecular orbital type calculation is carried out on benzene (cation and anion) and A^H is correlated to the charge density on proton. Such correlation seems to explain the larger splitting constant (A^H) in cation, generally observed.

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SYNTHETIC STUDIES OF BIFLAVONOIDS. PART I

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(Received May 9, 1970)

5,5″-Dihydroxy-7-7″-dimethoxybiflavone, a dimer of the naturally occurring flavone (tectochrysin) has been prepared by Ullman coupling of 5,7-dimethoxy-8-iodoflavone. The synthesis of the biflavone and related compounds is described.

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SPECTROPHOTOMETRIC DETERMINATION OF MOLYBDENUM AFTER EXTRACTION OF THE Mo (VI)-Sn(II)-CNS SYSTEM BY A HIGH MOLECULAR WEIGHT AMINE

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(Received January 20, 1970)

An investigation of the complex formed between molybdenum(VI) and thiocyanate in presence of Sn (II) in hydrochloric acid solutions has been carried out, and its extractability by a high molecular weight amine (HMWA) in organic solvent examined. The orange coloured Mbo(VI)–Sn(II)–CNS–complex is quantitatively extractable from an aqueous phase into an organic phase containing tricenzylamine. On the basis of this extractability a method has been developed for the spectrophotometric determination of molybdenum in presence of many other elements. Comparison of the absorption spectra of the coloured species in the aqueous and amine phases indicate the presence of the same absorption species in each medium. The extractability of the complex by a HMWA suggests that the coloured species is anionic.

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STUDY OF X-RAY POWDER DIFFRACTION AND INFRARED ABSORPTION OF P_2O_5 (O′-FORM)

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(Received May 22, 1970)

X-ray powder diffraction data of the stable orthorhombic form (O′-form) of phosphorus pentoxide have been indexed. IR spectra of both the hexagonal (H-form) and the O′-form have been recorded.

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CHEMICAL CONSTITUENTS OF CORCHORUS OLITORIUS AND CORCHORUS CAPSULARIS (JUTE)

Part II.*—Isolation of Corosin and β-Sitosterol from Roots

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(Received December 30, 1970)

A new compound, now designated as *corosin*, $C_{30}H_{46}O_7$, m.p. 292–293° (dec.)$[\alpha]_D^{26^\circ}$ +39° (*c*, 0.5% in methanol) and β-sitosterol, m.p. 137–138°C, have been isolated from the roots of *Corchorus capsularis* and *Corchorus olitorius* plants. Corosin gave an acetate, m.p. 257–258°C, $C_{34}H_{50}O_9$. $[\alpha]_D^{25^\circ}$ −4.5° (*c*, 0.96% in methanol). Corosin on refluxing in ethanol containing hydrochloric acid gave a product now designated as *corosic acid*, m.p. 285–286° (dec). $C_{30}H_{44}O_5$, $[\alpha]_D^{26^\circ}$ +188° (*c*, 0.76% in methanol). On acetylation corosic acid gave an *acetate*, m.p. 247–249 C, $C_{34}H_{48}O_8$, $[\alpha]_D^{26^\circ}$ +127° (*c*, 0.9% in methanol).

SHORT COMMUNICATION

PHYSICAL SCIENCES SECTION

Pakistan J. Sci. Ind. Res., Vol. **14**, Nos. 1-2, February-April 1971

STANDARDIZATION OF THIOSULPHATE BY DISPLACEMENT TITRATION USING N-BROMOSUCCINIMIDE

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(Received April 22, 1970)

SHORT COMMUNICATION

PHYSICAL SCIENCES SECTION

Pakistan J. Sci. Ind. Res., Vol. **14**, Nos. 1-2, February-April 1971

MANNITOL FROM FOMES FOMENTARIUS AND GANODERMA LUCIDUM

S.F. HUSSAIN, G.A. MIANA AND SAIFUR RAHMAN

PCSIR Laboratories, Peshawar

(Received July 14, 1970)

Biological Sciences Section

Pakistan J. Sci. Ind. Res., Vol. 14, Nos. 1–2, February–April 1971

STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XVII.—Synthesis of Amudol—a Metabolic Product of Penicillium martinsii Biourge

A. Kamal, Nilofer Kazi and Asaf A. Qureshi

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(Received October 31, 1970)

The synthesis of amudol (XI), a mold metabolite, has been carried out by two different routes starting from 2,5-dihydroxyacetophenone and 2,5-dihydroxybenzoic acid.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XVIII.—Isolation of Kamusol and Structure of Kojic Acid, Mannitol, Kojic Acid Methyl Ether, Methyl Octa-2,4,6-triene-1-carboxylate and Tetronic Acid, Metabolic Products of Aspergillus sulphureus

A. Kamal, Yasmeen Haider, Rafia Akhtar and Asaf A. Qureshi

PCSIR Laboratories, Karachi 39

(Received November 13, 1970)

Isolation of six metabolites of *Aspergillus sulphureus* is described. Structures of five of these, viz. kojic acid, mannitol, kojic acid monomethyl ether, methyl octa-2,4,6-triene-1-carboxylate, and tetronic acid, are established while the sixth metabolite *kamusol*. $C_7H_{14}O_7$ has been characterised as a pentahydroxy compound.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XIX.—Structure and Stereochemistry of Kamusol, a Metabolic Product of Aspergillus sulphureus

A. Kamal, Yasmeen Haider and Asaf A. Qureshi

PCSIR Laboratories, Karachi 39

(Received December 30, 1970)

The structure and stereochemistry of *Kamusol* $C_7H_{14}O_7$, m.p. 158-159°C, $[\alpha]_D^{25}$—9.09, a metabolite of *Aspergillus sulphureus* has been established as 1.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XX.—Isolation and Characterization of 2, 5-Dimethoxybenzoquinone, Tartronic acid, Itaconic Acid, Succinic Acid, Pyrocalciferol, Epifriedlinol, Lanosta-7,9(11)-24-triene-3-β-21–diol, Trichodermene-A*, Methyl 2,4,6-octa-trienecarboxylate, Cordycepic Acid and Mannitol—Metabolic Products of Trichoderma pseudokoningii

A. Kamal, Rafia Akhtar and Asaf A. Qureshi

PCSIR Laboratories, Karachi 39

(Received December 30, 1970)

The isolation of eleven metabolites from *Trichoderma pseudokoningii* (IMI No. 130748) are described. They are characterized as 2,5-dimethoxy-benzoquinone (I), $C_8H_6O_4$, m.p. 250°C; tartronic acid (II), $C_3H_4O_5$, m.p. 163°C; itaconic acid (III), $C_6H_6O_4$, m.p. 162–164°C; succinic acid (IV), $C_4H_6O_4$, m.p. 185–187°C; pyrocalciferol (V), $C_{28}H_{44}O$, m.p. 93–95°C, $[\alpha]_D^{25} + 506°$; epifriedlinol (VI), $C_{30}H_{52}O$, m.p. 280°C, $[\alpha]_D^{25} + 24°$; lanosta-7,9(11)-24-triene-3β-21-diol (VII), $C_{30}H_{48}O_2$, m.p. 194–197°C, $[\alpha]_D^{25} + 72°$; *trichodermene-A* (VIII), $C_{19}H_{28}$, b.p. 85°C; methyl 2,4,6-octatrienecarboxylete (IX), $C_9H_{12}O_2$, m.p. 158C; cordycepic acid, $C_7H_{12}O_6$, X m.p. 168°C, $[\alpha]_D^{25} + 6.8°$; and D-mannitol(XI) mainly through physical methods using UV, IR, PMR and mass spectral analyses.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XXI.—Biogenesis of Yasimin and Nornidulin, Metabolic Products of Aspergillus unguis

A. Kamal, Yasmeen Haider, Rafia Akhtar and Asaf A. Qureshi

PCSIR Laboratories, Karachi 39

(Received December 30, 1970)

The biogenesis of the ring B of yasimin (I) and nornidulin (II) has been shown to be derived from methionine and two units of mevalonic acid.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XXII.—Conversion of Plausible Intermediate Precursors like Salicylic Acid and Orcinol into Yasimin and Nornidulin, Metabolic Products of Aspergillus unguis

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(Received December, 30, 1970)

The incorporation of tritium-labelled orcinol and salicylic acid into yasimin and nornidulin, metabolic products of *Aspegrsillus unguis*, has been established. Salicylic acid (tritium-labelled) was found to be a better precursor than orcinol for ring A of yasimin.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XXIII.—Biosynthesis of Curvulic Acid, a Metabolic Product of Curvularia Siddiqui, sp. novo

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The biosynthesis of curvulic acid, a metabolic product of *Curvularia Siddiqui*, sp. novo, is shown to be derived from one acetate and four malonate units by head-to-tail condensation. The O-methyl ether is derived from methionine or formic acid due to transmethylation. It is further observed that methionine is far better precursor than formic acid for the C_I donor system.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XXIV.—Structure and Stereochemistry of Tajixanthone, a Metabolic Product of Aspergillus stellatus–Curzi

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(Received January 22, 1970)

The structure, stereochemistry and biogenesis of *Tajixanthone*, a metabolite of *Aspergillus stellatus*, have been described. The structure has been established through degradative studies and physical methods as 3,4,4a,14a-tetrahydro-4,8-dihydroxy-2,2,6,9,14a-pentamethyl-3-methylene-2*H*,5*H*,7*H*-pyrano [3′, 2′: 5,6] pyrano [3,2-*b*]xanthen-7-one (IV)*. The relative stereochemistry has also been determined from the coupling constants of the protons in its PMR spectrum, and their distinctive splitting patterns.

A number of derivatives, viz. monomethyltajixanthone and dihydrotajixanthone, have been prepared and their PMR and mass spectral studies are described.

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STUDIES IN THE BIOCHEMISTRY OF MICROORGANISMS

Part XXV.—Structure and Stereochemistry of Shamixanthone and Ajamxanthone, Metabolic Products of Aspergillus stellatus-Curzi

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(Received January 22, 1971)

The structure and relative stereochemistry of shamixanthone and ajamxanthone, metabolites of *Aspergillus stellatus* have been established as 1,2,3,3a,12,12a-hexahydro-1,9-dihydroxy-11-(hydroxymethyl)-3,3a-8-tetramethyl-2-methylene-10*H*-pentaleno-2,1 *b*-xanthene-10-one (I) and 2,3,3a, 12-Tetrahydro-9-hydroxy-11-(hydroxy methyl)-3, 3, 3a, 8-tetramethylene- 10 *H*-pentaleno [2,1 *b*] xanthen-10-one.*(III) respectively. The structural elucidation has been mainly based on physical methods.

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SOME LICHENS FROM CONIFEROUS FORESTS IN WEST PAKISTAN

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(Received September 10, 1970)

Twenty-eight corticolous lichens are reported from coniferous forests in West Pakistan of which 10 appear to be first records for the country. The new combination *Desmaziera sinensis* (Jatta) D. Hawksw. (=*Ramalina sinensis* Jatta) is proposed.

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TWO NEW GENERA OF TYPHLOCYBINAE (HOMOPTERA: CICADELLIDAE) FEEDING ON ROSE (ROSA INDICIA), IN WEST PAKISTAN*

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(Received May 21, 1970)

The Typhlocybine genera described from West Pakistan include four belonging to the tribe Dikraneurini, and four to the *Eupteryx* complex of tribe Typhlocybini. The present work includes description of two new monotypic genera i.e. *Mahmoodiana*, based on *M. acuta*, new species in the tribe Dikraneurini and the genus *Domelia*, new genus based on the new species *Domelia nigra* in the *Eupteryx* complex of tribe Typhlocybini. Both the species are reported feeding on rose, *Rosa indica* in parts of northern hilly areas of West Pakistan.

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SOME CHEMICAL MODIFICATIONS OF HUMAN FOLLICLE STIMULATING HORMONE (FSH)

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(Received June 13, 1970)

A preparation of human pituitary FSH was subjected to a variety of chemical modifications such as acetylation, succinylation, guanidination, alkylation and esterification. Effect of these reactions on the biological activity of the glycoprotein hormone has been studied.

Both the acetylation and the succinylation reactions caused complete loss of biological activity which could not be restored by de-*O*-acetylation with hydroxylamine. More than 50 per cent of the activity was retained after guanidination with *O*-methylisourea. Carbamylation by the use of $KC^{14}NO$ caused no loss of activity.

Alkylation either with iodoacetamide or acrylonitrile did not effect the activity, 91% of which was retained when disulphide groups were reduced and this followed by alkylation. The use of 8M urea to alter the tertiary structure of the glycoprorein, followed by cleavage and alkylation of disulphide linkages, resulted in extensive loss of activity. Treatment with 8M urea alone under similar conditions diminished the activity by 35 per cent. Almost complete loss of activity was also observed on esterification of FSH. It is suggested that the last effect may have been caused by the modification of *N*-acetyl neuraminic acid residues, known to be essential for the complete manifestation of the biological activity.

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SULPHUR IN FIBROIN FROM BOMBYX MORI

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The cystine content of the fibroin from gland has been determined by radioactive tracers technique, i.e. measuring both the ^{35}S content of the sample and that of cystine.

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EFFECT OF SUGAR ON HELMINTHOSPORIUM ORYZAE CAUSING BROWN SPOT OF RICE *

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(Received January 29, 1970)

The effect of sugar concentrations in malt-extract and glucose-nitrate medium on *Helminthosporium oryzae*, causing brown spot of rice was studied. The length of conidia varied inversely with the sugar concentrations. Mycelial growth generally increased with the increase of sugar up to a concentration of 3%. Further increase of sugar retarded the mycelial growth. Glucose-nitrate medium yielded better results than malt-extract medium.

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THE FERMENTATION PRODUCTION OF TETRACYCLINES, THE ANTIFUNGAL ANTIBIOTIC AYF AND VITAMIN B_{12} BY STREPTOMYCES AUREOFACIENS

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Four different media were used for the fermentation production of tetracyclines to select the best one. Medium No. 1 was favourable for the fermentation production of tetracyclines, vitamin B_{12} and AYF. The microbial cells attained its maximal productivities for the production of terracyclines at 72 hr and for the production of the antifungal antibiotic AYF and vitamin B_{12} at 120 hr.

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EFFECT OF EDTA ON THE PRODUCTION OF RIBOFLAVIN BY CANDIDA GUILLIERMONDII

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(Received April 23, 1970)

The biosynthesis of riboflavin was stimulated by the addition of ethylenediamine tetra-acetic acid to a glucose + salt + aspargine + biotin medium by *C. guilliermondii*. The inhibitory effect of iron was reduced by chelation. The important factors in improving the yield of riboflavin by yeast were concentrations of EDTA and iron, ratios of Fe^{+2} — EDTA or metals ($Fe^{+2} + Mg^{+2}$) + EDTA and time of addition of chelating agent to shake flask cultures. In general, 1:1 ratio of Fe^{+2}-EDTA or Metals-EDTA gave better yield of riboflavin. The greatest stimulation was obtained with EDTA of 2.028 mM, when iron level was 0.18 μM. Moreover, the cultures when grown with EDTA produced large amount of riboflavin than by adding it at later stages during fermentation.

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STUDIES ON THE ANTIMICROBIAL ACTIVITIES OF ZINC CAPRYLATE

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Bacteriostatic, fungistatic and fungicidal studies of zinc caprylate were carried out on bacteria and fungi. Among bacteria tested, 1% solution of zinc caprylate in triethanolamine: water (1:1 v/v) was most effective for *Shigella dysenteriae* (500 μg/ml). It was least effective for *Bacillus subtilis* (3000 μg/ml). Out of fungi, *Trichophyton gourvilii, Trichophyton schoenelinii, Trichophyton rubrum, Trichophyton violaceum, Candida albicans, Candida tropicalis, Microsporum vanbreuseghemii, Sporothrix schenckii, Aspergillus niger, Fusarium* sp. and *Helminthosporium* sp. were tested. It was found to be most effective on *Trichophyton gourvilii* with an inhibition zone of 5.2 cm, and least effective on *Aspergillus niger* with an inhibition zone of 1.3 cm.

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STUDIES ON STORED FOOD GRAIN FUNGI

Part II.—Fungi from Oilseeds and Plantago ovata

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Fungi infesting oilseeds and *Plantago ovata* stored in different Karachi godowns were isolated and identified. The extent of damage and the frequency of occurrence were also determined. Thirty-five species belonging to 17 genera were isolated from the above-mentioned oilseeds and *P. ovata*.

Maximum number of fifteen fungi were isolated from *Sesamum indicum* (E.Pak.) whereas *Brassica nigra* and *B. campestris* yielded minimum number of organisms, 10 each. Moisture content was highest in (15.2%) *Sesamum indicum* (E. Pak.) and lowest in *Brassica campestris* (8.9%). Species of *Aspergillus* were most prevalent and surpassed all other organisms. Disinfection of seeds with 1:1000 $HgCl_2$ for different lengths of time reduced the number of organisms isolated.

SHORT COMMUNICATION

BIOLOGICAL SCIENCES SECTION

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SUSCEPTIBILITIES OF EGYPTIAN COTTONS TO CELLULOSE DECOMPOSING MICROORGANISMS

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SHORT COMMUNICATION

BIOLOGICAL SCIENCES SECTION

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TOXICITY OF PETKOLIN AGAINST CIGRATTE BEETLE (COLEOPTERA: ANOBIIDAE)

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SHORT COMMUNICATION

BIOLOGICAL SCIENCES SECTION

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CONTROL FO RICE STEM BORER BY PETKOLIN AT THE COVERNMENTS RICE FARM KALA-SHAH KAKU DUDRING 1967-1968

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Technology Section

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SEPARATION AND CHARACTERISATION OF TOTAL HYDROCARBONS FROM LOW TEMPERATURE COAL TARS

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THE COMPARATIVE INFLUENCE OF SINGLE FIBRE CRIMP CONFIGURATION ON THE BULK MODULUS OF ELASTICITY OF WOOL FIBRE ENSEMBLES

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The study illustrates relative significance of crimp parameters together with other relevant wool properties in determining the bulk compressibility of a wide variety of raw wools. It involves coherent analyses of crimp wave, its undergirding natural twist of the reversing type and its measurement technique. The natural twist arising from the rotation of fibre major/minor axis closely corresponds to the behaviour of spinning twist although the single fibre crimps are differentially modified by the stress of yarn manufacture.

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CONTROL OF MESQUITE

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Two non-selective herbicides 81 KB, and 82 TB have been formulated to eradicate and check the spread of mesquite and similar weeds. Field trials were carried out to study these formulations alongside the already available foreign-made herbicides 2,4-D ester and 2,4,5-T. Of the various herbicides studied, 81 KB, 82 TB and 2,4,5-T in 50–75% concentrations have been found to be most satisfactory. But it is recommended that the use of 81 KB and 82 TB should be preferred to 2,4,5-T in view of the low production cost of the former two products i.e. cost per gallon of a 100% solution of 81 KB and 82 TB has been worked out to be 10-12 rupees as compared to 75 rupees per gallon of 2,4,5-T.

SHORT COMMUNICATION

TECHNOLOGY SECTION

Pakistan J. Sci. Ind. Res., Vol. **14**, Nos. 1-2, February-April 1971

STUDY OF THE IMPORTANCE OF BENDING MODULUS IN THE SCIENTIFIC GRADING OF RAW JUTE FIBRE

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SHORT COMMUNICATION

TECHNOLOGY SECTION

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MEDULLATION OF PAKISTANI WOOLS AND ITS RELATIONSHIP WITH MECHANICAL PROPERTIES

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SHORT COMMUNICATION

TECHNOLOGY SECTION

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EFFECTIVENESS OF SOME FUNGICIDES IN THE CONTROL OF POWDERY MILDEW OF TEA IN SIND

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(Received June 8, 1970)