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SYNTHESIS AND SOME REACTIONS OF 1-PHENYL-3-METHYL-2-PYRAZOLIN-5-ONE DERIVATIVES

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(Received April 6, 1977; revised November 20, 1977)

Abstract. Chemical reactions of 2-pyrazolin -5-one derivatives with diketones, chalcones aromatic hydrocarbons, Grignard reagents, hydrazines, amines and hydroxylamine hydrochloride has been investigated.

SYNTHESIS AND REACTION OF 3-CYANO 2-(1H)-PYRIDONES**M.ABDALLA, A.ESSAWY and A.DEEB***Faculties of Science Zagazig and Assiut (Aswan) Universities, A.R.E.*

(Received April 13, 1977; revised July 19, 1977)

Abstract. Ethyl cyanoacetate condenses with unsaturated Ketones (II) at 150° to give 3-cyano-4,6-diaryl-2-pyridones (III). The reactions of these compounds (III) with alkylating agents. Phosphorus oxychloride, amines and Grignard reagents has been investigated.

OXAZOLONES¹

Part II. Synthesis and Reactions of 4-Arylidene-2-[2'Furyl]-5 (4)-Oxazolones

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(Received April 20, 1977; revised August 3, 1977)

Abstract. 4-Arylidene -2- [2' -furyl] -5 (4)-oxazolones (I a - d) were prepared. *Ortho*, *meta* and *para*-aminobenzoic acids react with (I a - d) to give α -[2'-furamido-cinnamic acid carboxyanilides (II a - f), (I a - d) react with aromatic amines to give α -[2'-furamido]-N-substituted cinnamamides (III a - h). Also (I a - d) react with hydrazine and hydroxylamine hydrochloride to give (IV a - d) and (V a - d) respectively. Azidolysis of (I d) give α -[tetrazoly -(1)] -5-[2'furyl] acrylic acid (VI).

X-RAY DETERMINATION OF UNIT CELL DIMENSIONS OF SODIUM BENZOYLACETONATE

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(Received June 8, 1977; revised November 20, 1977)

Abstract. Sodium benzoylacetate has not been studied by X-ray diffraction methods. There is no X-ray information on their interplaner spacings and lattice dimensions.

Sodium benzoylacetate showed anomalous electrical properties when heated at 90° . There is a phase transformation at this particular temperature.

X-ray powder diffraction methods were used to study the original sample and the new phase formed at 90° . The lattice spacings and the geometry of the two crystals before and after heating were evaluated. The results showed that crystals of sodium benzoylacetate are monoclinic while the crystals of the preheated sample at 90° are triclinic.

CONTRIBUTION TO THE DETERMINATION OF CHEMICAL COMPOSITION OF COPOLYMERS BY MEANS OF GEL PERMEATION CHROMATOGRAPHY

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(Received February 23, 1977, revised October 25, 1977)

Abstract. The determination of chemical composition by means of GPC is discussed on the basis of statistical and block co-polymers from styrene-butadiene or α -methylstyrene-butadiene. This method can be used when the refractive index increment (dn/dc) of the copolymers is the sum of the refractive index increments of homo-polymers. In addition, the dependence of extinction coefficient from the sequence length, and the dependence of the refractive index of the polymer from molecular weight, were considered. The GPC results were in good agreement with those obtained from IR and NMR spectroscopy.

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CHROMONE 6-SALICYLHYDRAZONE COMPLEXES OF SOME DIVALENT TRANSITION METAL IONS

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(Received October 19, 1977; revised January 1, 1978)

Abstract. Metal complexes of 2-methyl 5-methoxy 7-hydroxy chromone 6-salicylhydrazone with some divalent transition metal ions were investigated by the use of spectrophotometric, electric conductance, pH titration and infrared measurements. Isolation of solid complexes and physical measurements revealed the existence of mono and bisligand complexes. Complex formation has been to take place through a proton displacement from the hydroxy group in 7-position of the chromone residue and also with the azomethine and carbonyl groups of salicylhydrazide residue. Spectrophotometric studies supported the using of this ligand for the microdetermination of small quantities of metal ions in solution.

THE Cu (II), Co (II), Ni (II), Mn (II) AND Zn (II) CHELATES WITH CHROMONE 6-ACETYL HYDRAZONE

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(Received June 11, 1977; revised October 6, 1977)

Abstract. The metal chelates formed through the reaction of Cu (II), Co (II), Ni (II), Mn (II) and Zn (II) with 2-methyl 5-methoxy 7-hydroxy chromone 6-acetyl hydrazone are investigated by the use of spectrophotometric, electric conductance and pH titration measurements. Isolation of solid complexes and physical measurements revealed the existence of mono and bis ligand complexes in the keto-form. Complex formation has been shown to take place through a proton displacement from the hydroxy group in 7-position of the chromone residue and also with the azomethine and carbonyl groups of acetyl hydrazide residue. Spectrophotometric studies supported the using of this ligand for the microdetermination of small quantities of metal ions in solution. The apparent formation constants of the complexes are also determined. The visible absorption spectra of the solid complexes in dimethyl formamide indicate that all these complexes have a distorted octahedral configuration.

Biological Sciences Section

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STUDIES IN ROOT PROMOTING SUBSTANCES FOUND IN TRADESCANTIA FLUMIENSIS VELL

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(Received March 8, 1977; revised December 26, 1977)

Abstract. Fresh sap of the stem cuttings was fractioned by descending paper chromatography and assayed. One zone of blue colour under UV florescence at 0.8 R_f was found to be active in root initiation and promotion when tried on mung bean stem-cutting.

RESPONSE OF SEVERAL WHEAT GENOTYPES TO ZINC

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(Received August 31, 1977; revised January 5, 1978)

Abstract. The behaviour of twelve genotypes of wheat (*Triticum aestivum* L.) was evaluated at 0, 2.5 and 12.5 ppm zinc applied as ZnSO_4 under glasshouse conditions. Considerable variation among the genotypes was observed with respect to dry matter production, Zn concentration and Zn-uptake. Increase in dry matter yield at 2.5 ppm Zn application ranged from 3.7 to 84.9% and 2.6 to 41.3% in shoots and roots respectively. On the over all basis Lyallpur-73 and Yecora appeared to be the most susceptible while Mutant-17 to be least susceptible to change in dry matter yield, Zn concentration due to Zn.

SURVEY ON THE OCCURRENCE OF *VIBRIO PARAHAEMOLYTICUS* AND *VIBRIO ALGINOLYTICUS* IN FISH AND SHELLFISH FROM THE KARACHI COASTAL WATERS

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(Received August 21, 1977; revised October 30, 1977)

Abstract. The first reported isolations of *V. parahaemolyticus* and related organism *V. alginolyticus* from fish and shrimps harvested from Karachi coastal waters are described. Sixty per cent of the samples examined yielded *V. parahaemolyticus*. In 62 of the 65 positive samples, *V. parahaemolyticus* could be isolated from direct plating on TCBS. Morphological and biochemical characteristics of the isolates generally confirm to those described for this organism in the literature. Forty two of the 80 isolates showed a positive Kanagawa phenomenon. To date, there have been no reports of *V. parahaemolyticus* food poisoning outbreaks due to the consumption of fish or shrimps from this region. *V. alginolyticus* was isolated from 107 of the 108 samples examined.

DISTRIBUTION OF ZYGINIDIA QUYUMI ON WHEAT IN PUNJAB (PAKISTAN) BY LOCATION, DAY-TIMINGS AND TEMPERATURE*

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(Received July 6, 1977; revised January 5, 1978)

Abstract. Recent workers have pointed out the economic significance of *Z. quyum* as a pest of wheat in Punjab (Pakistan). The present work reports the activity and distribution of *Z. quyum* with temperature, and day timings in the most heavily infested areas of the province. It is concluded that the leafhopper is equally active with minor fluctuations from morning to evening, at temperature 80°F or above. The distribution is not much different in the fore or after-noons in any of these areas.

EFFECT OF NPK FERTILIZERS ON POD FORMATION AND YIELD OF GROUNDNUT IN SOME BANGLADESH SOILS

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(Received April 29, 1977; revised September 25, 1977)

Abstract. The effect of different levels of NPK fertilizers on pod formation and yield of Dacca-1 groundnut grown in pots in 4 different soils of Bangladesh, namely, Bangladesh Agriversity Farm Soil (S_1), Kuliar Char Soil (S_2), Sutiakhali Char Soil (S_3) and Madhupur Red Soil (S_4) were studied.

In all the soils, except S_4 , the highest number of pods as well as the highest nut yield per plant was obtained by applying 30 kg N, 60 kg P_2O_5 and 60 kg K_2O /ha. The highest number of pods per plant was 42 and the highest nut yield per plant was 37.82 g, both obtained from the S_1 soil. In the S_4 soil, pod formation and nut yield increased with increases in the level of NPK fertilizers. The soils have a marked effect both on pod formation and nut yield. The soils ranked as follows: $S_1 > S_2 > S_3 > S_4$, according to their capability of producing pods and nut yield.

Technology Section

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EFFECT OF DILUTION ON SOLUBLE IONS AND EXCHANGEABLE CATIONS IN SOME SOILS OF THE NORTH WEST FRONTIER PROVINCE, PAKISTAN

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(Received June 19, 1977; revised July 26, 1977)

Abstract. Three salt affected soils containing various amounts of carbonates, chlorides, and sulfates, were selected from the North West Frontier Province, Pakistan. The main objectives of the study were to examine the effect of dilution in saturated extract and 1:5 and 1:100 soil water extracts on soluble ions and exchangeable cations.

With the exception of CO_3 the amounts of all other ions increased in soil solution, with increase in the moisture content of soil. The amounts of exchangeable monovalent cations decreased while that of divalent cations increased with dilution. The ESP and SAR of all soils also decreased subject to increasing moisture in the soils.

PRESERVATION OF MANGOES WITH FUNGICIDAL WAX EMULSION

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(Received September 22, 1975; revised November 20, 1977)

Abstract. Experiments were carried out to determine the suitability of a wax emulsion developed in these laboratories, for extending the storage life of mangoes under ambient conditions. The changes in moisture content, total sugar, vitamin C and acidity of the edible portion of mangoes demonstrated the greater period of storage life in wax treated lot. Spoilage due to mould development and degreening of peels was higher in unwaxed mangoes than in waxed mangoes. The efficiency of the wax emulsion for delaying the ripening process of mangoes was also revealed by organoleptic evaluation.

SOIL ORGANIC MATTER CONTENTS IN VARIOUS AREAS OF N.W.F.P.

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(Received March 4, 1977; revised January 7, 1978)

Abstract The organic matter contents were determined in the soils of the N.W.F.P. The results of chemical determination show that the soils of D.I. Khan are very low in organic matter. Compared with good soil organic matter contents (4-5%), the soils of the NWFP are very poor. Comparison of these results with organic matter contents for soils of the Punjab on the average basis is also low. The average organic matter content of Punjab⁷ soils is 2.6% while that of the N.W.F.P. is 0.6%. Thus it is concluded that the soils of the N.W.F.P. are very poor in this factor in crop production of yield. Unfavourable soil and climatic conditions are the cause of the low matter contents.

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DETERMINATION OF α -TOCOPHEROL (VITAMIN E) IN OILS BY SPECTROPHOTOMETRIC METHOD

SHAHINA ZAKA and NAEEM SHAKIR

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(Received July 31, 1977; revised August 7, 1977)

Abstract. The Emmerie Engel's method is used for the determination of α tocopherol (Vitamin E) in cottonseed oil, coconut oil, palm oil and wheat germ oil. The method has been found to be quite accurate, reproducible and less time consuming as compared to other analytical methods. Standard graph has been drawn. The results have been discussed

ENZYMIC DETOXIFIED MUSTARD SEED MEAL (DMSM) AS A SUBSTITUTE FOR VEGETABLE AND ANIMAL PROTEIN CONCENTRATES

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(Received April 29, 1977; revised September 8, 1977)

Abstract. Three experiments of 8 weeks each were conducted on day old PIA-Shaver Chicks. Enzymic detoxified mustard seed meal (DMSM) was used as a substitute of animal as well as vegetable proteins. These experiments showed that detoxified mustard seed meal could replace 100% of the sesame-seed meal; 66% of the blood meal; 33% of the fish meal, and 33% of blood meal, and 100% sesame meal from poultry feed without affecting growth. Incorporation of DMSM in the ration improved weight gain, feed efficiency, feed cost per kg of weight gain.

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SOLVENT EXTRACTION OF SUCCINIC ACID

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(Received May 14, 1977; revised June 30, 1977)

Abstract. Distribution studies for the system water-succinic acid-organic solvent have been made at $25 \pm 2^\circ$. The phase equilibria of the systems were measured at concentrations varying between 0.05 M to 0.2 M. Organic solvents used were amyl alcohol, amyl acetate, chloroform, ether, carbon tetrachloride, benzene, toluene, bromobenzene, chlorobenzene, nitrobenzene and aniline. Dielectric constant and structure of the solvents appear to be the decisive factors in fixing the extraction efficiency.

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THE DETERMINATION OF PHENOLS BY THE RING-OVEN TECHNIQUE

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(Received March 25, 1977; revised July 10, 1977)

Abstract. A simple, quick, precise and sensitive method for the determination of cresol, resorcinol, phloroglucinol, hydroquinone and pyrogallol has been devised using the Ring-Oven Technique. Effect of interferences has also been studied. Shelf life of the standard scale has also been investigated. The method reported is practicable even for the determination of phenols in polluted water.

Short Communications

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DETERMINATION OF PEROXYDISULPHATE BY HYDRAZINE SULPHATE : MODIFIED PROCEDURES

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