Coden: PSIRAA 24(4) 127–166 (1981)

PAKISTAN JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Vol. 24, No. 4, August 1981

Published bimonthly by

PAKISTAN COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
KARACHI

Physical Sciences Section

akistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

THE MICROENVIRONMENT AND KINETICS OF HUMAN ERYTHROCYTE ACETYL CHOLINESTERASE

S.F. Mabood

Department of Chemistry, University of Peshawar, Peshawar, Pakistan

(Received December 11, 1980)

Human erythrocyte acetylcholinesterase is an externally oriented intrinsic membrane-bound enzyme whose kinetics were studied under a variety of different conditions. Activities of the enzyme in different preparations were measured spectrophotometrically at pH 7.4 and 30°. The enzymic velocity (v), thermal decay constant (λ) and the apparent Michaelis–Menten parameters (Kapp and Vapp) were used as probes to follow changes in the enzyme and/or its microenvironment.

Pakistan J. Sci. Ind. Res., Vol. 24. No. 4, August 1981

SYNTHESIS OF 2-PYRAZOLIN-5-ONES, 3-PYRAZOLIN-5-ONES AND 3, 5-PYRAZOLIDINEDIONE DERIVATIVES

Mohamed Abbas Metwally and Fathy A. Amer

Chemistry Department, Faculty of Science, Mansoura University Mansoura, A.R. Egypt

(Received January 26, 1980)

Treatment of α-arylhydrazono derivatives of ethyl acetoacetate (Ia–d) with each of N, N-diphenylsulphonylhydrazine, *p*-acetamidobenzenesulphonhydrazide and acetylhydrazine afforded 4-arylhydrazono-3-methyl-2-pyrazolin-5-ones (IIIa–d). On the other hand when (Ia, c) were treated with N-phenyl-N-phenylsulphonylhydrazine it gave the corresponding 1-phenyl derivatives (VIa, c). Interaction of α-N-methyl derivatives (VIIa–d) with phenylhydrazine afforded (IIIa–d) and 1-phenyl-4-methyl-3, 5-pyrazolidinedione (IX.).

Short Communication

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

AN ANOMALOUS BEHAVIOUR OF foF2 AT KARACHI

Tariq Majeed*

Space and Atmospheric Research Centre, SUPARCO, P.O. Box 8402, Karachi 32, Pakistan

(Received January 26, 1980)

Biological Sciences Section

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

SOOTY MOLD ON MANGO PLANTS AND ITS RELATIONSHIP WITH LEAFHOPPERS AND CLIMATIC FACTORS IN KARACHI-PAKISTAN DURING 1978-79

Mubarik Ahmed, Manzoor Ahmed, M.A. Baluch and Rukhsana Naheed

Leafhopper Ecology Research Project, Department of Zoology, University of Karachi, Pakistan*

(Received July 9, 1980)

Fungal infestation or sooty mold of mango has become serious problem in recent years in Karachi. In view of its increasing economic significance, a study of its relationship with mango leafhoppers, and several environmental variables was made from May 1978 to May 1979 in Karachi. Statistical analysis based on data obtained in these studies on 10 randomly picked up mango plants in Karachi University Campus showed that the growth of sooty mold is significantly related with the population of mango leafhoppers and minimum week temperatures, but highly significantly related with maximum day temperatures, The fungal growth is at its peak during May and June, at minimum temperature between 25–30°, and maximum temperature around 35°.

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

A SIMPLIFIED TECHNIQUE FOR MASS CULTURE OF UNICELLULAR ALGAE

Phool Begum Zahid, Tajwar Sultana and Wajid Hussain

Department of Botany, University of Karachi, Karachi 32, Pakistan

(Received January 8, 1980)

Algae have a bright future as a potential source of food and fodder. They may be introduced as direct sources of protein for humans. One method for production of such protiens is through coultivation of microscopic green and blue–green algae. For this purpose a laboratory scale mass culture appratus was established and the suitability of *Scenedesmus quadricauda, Scenedesmus dimorphus* and *Monoraphidium contortum* as sources of good quality protein was studied.

Short Communication

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

ECOLOGICAL NOTES ON A FEW HYMENOPTERA ASSOCIATED WITH LAC

S. Mahdihassan

Nazimabad, Karachi

(Received February 15, 1981)

Technology Section

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

RECOVERY OF METALLIC COPPER FROM LEACH SOLUTIONS. PART II

K. Hussain

Ore Processing and Metallurgy Division, PCSIR Laboratories, Lahore, Pakistan

(Received August 23, 1980)

First part of this review dealt with the salient features of the application of cementation and solvent extraction in the recovery of copper from its leach solutions. In this Part we shall try to present the case of gaseous reduction and ion exchange with solid resins.

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

RECYCLING OF CROP RESIDUE AND ANIMAL WASTE AS FEED STUFF

F.H. Shah, A.D. Khan and Imtiaz Ahmad

Food Technology and Fermentation Division, PCSIR Laboratories, Lahore 16, Pakistan

(Received April 27, 1980)

Bagasse pith and fresh cow dung were ensiled, in laboratory type silos, for a period of 33 days. The silage was free from pathogenic bacteria, contained up to 2.94% lactic acid and showd up to 9.4% increase in protein and up to 8.3% in ether extracts. The *in vivo* increase in dry matter digestibility was up to 22 %.

Pakistan J. Sci. Ind. Res., Vol. 24, No. 4, August 1981

THE INFLUENCE OF WATER VAPOUR ON THE CONVERSION OF α- TO γ-Fe_2O_3 *

W. Weisweiler

Professor, Institute of Technical Chemistry, University of Karlsurhe, Kaiserstr, 12, D-7500 Karlsruhe W. Germany

Q. Iqbal

University of Engineering and Technology, Lahore, Pakistan

An attempt has been made to study the significance of water vapour in the conversion of α-Fe_2O_3 (hematite) to pure phase γ-Fe_2O_3 (maghemite or γ-hematite) which represents the information carrier for magnetic tape recording. A gas mixture of 10% carbon monoxide and 90 % nitrogen instead of conventional hydrogen/nitrogen gas mixture was used as a reducing agent for γ-Fe_2O_3 to Fe_3O_4 (magnetite). Subsequently Fe_3O_4 was oxidized by dry air to produce γ-Fe_2O_3. Air oxidation of freshly reduced active magnetite formes pure phase γ-Fe_2O_3 while that of altered magnetite (which was exposed to atmospheric conditions and has developed γ-Fe_2O_3 nuclei on its surface) results in the formation of a mixture of γ- and γ-Fe_2O_3. In the presence of water forming reducing gases, γ-Fe_2O_3 was obtained at switching temperatures (i.e. changing over from reducing to oxidising atmosphere) of 190–280°, whereas in the absence of water a smaller temperature range of 240–280°, was found. The results suggest that the presence of water vapour is not a necessary condition in the production of γ-Fe_2O_3.

Pakistan J. Sci. Ind. Res., Vol. 24, No.4, August 1981

CHLORINATION OF ZIARAT LATERITE – A PRELIMINARY INVESTIGATION*

R.A. Shah, M. Amin and F.M. Zafar

PCSIR Laboratorites, Peshawar, Pakistan

Chlorination of Ziarat laterite was studied for the recovery of iron, aluminium and titanium as volatile chlorides. Optimum conditions such mesh size, temperature and amount of wood charcoal as reductant are reported. It is found that −85 to +100 laterite when chlorinated at $900^{o} - 950^{o}$ (fixed carbon 47.74%) gave a recovery 92–96 % iron, aluminium and titanium.