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STUDIES IN THE CONVERSION OF CHAKSINE INTO ITS ISOMERS

SALIMUZZAMAN SIDDIQUI AND (MRS.) MASHOODA HASAN

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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CHEMICAL COMPOSITION OF ADHATODA VASICA

M. IKRAM, M. EHSANUL HUQ AND S.A. WARSI

North Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Peshawar

AND

VIQAR-UDDIN AHMAD

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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A new alkaloid ($C_{11}H_{12}N_2O_2$, m.p. 246–48° dec.) provisionally named Vasicinine, has been isolated from the flowering tops of *Adhatoda vasica*. No vasicinone or betaine could be detected in the extracts. Vasicine and betaine have been isolated from the fresh leaves, but no vasicinone or vasicinine could be isolated.

CHEMICAL CONSTITUENTS OF EUPHORBIA ROYLEANA BOISS*^I

MUHAMMAD NAZIR, NAEEMUDDIN, IFTIKHAR AHMAD, S.A. KHAN, M.K. BHATTY AND KARIMULLAH

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

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Euphol, cyclocuculenol and a new triterpenoid alcohol, containing a cyclopropane ring and a vinylidene group, have been isolated from the latex of *Euphorbia royleana* Boiss.

STUDIES ON CARBOXYMETHYLCELLULOSE

Part I.—Preparation of a Nontoxic Emulsifying Agent from Jute Cellulose

M.H. KHUNDKAR AND A.K. BHATTACHARJEE

Department of Chemistry, Dacca University, Dacca

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Na-carboxymethylcellulose having a high degree of substitution has been prepared from different cellulosic materials by treatment with a high concentration of NaOH (18-70 percent), followed by reaction with chloroacetic acid. With purified jute cellulose, a better degree of substitution (upto 1.05) was obtained, than either with cotton or bamboo pulp. The process of carboxymethylation was virtually complete in about six hours.

The product was freed from sodium glycollate by three successive extractions with 80 percent (v/v) ethyl alcohol; the purified product was non-toxic. Products having degree of substitution of 1.05 could be used as a stabilizer for emulsion of olive oil in water.

STUDIES ON CARBOXYMETHYLCELLULOSE

Part II.—Use of Organic Alcohols as Reaction Medium for Carboxymethylation

M.H. KHUNDKAR, A.K. BHATTACHARJEE AND M. MOSIHUZZAMAN

Department of Chemistry, Dacca University, Dacca

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Carboxymethylation of purified jute cellulose was carried out in different alcoholic medium containing some water. The effect of the proportion of water (to cellulose) was studied; best result was obtained (D.S.—1.17) with ethyl alcohol, with water/cellulose ratio of 1:1. The product was white, crystalline and soluble in water. Probable reasons for better reaction in alcoholic medium have been discussed.

UV SPECTROPHOTOMETRIC DETERMINATION OF SUBMICRO QUANTITIES OF SERPENTINE IN SERPAJMALINE

R.A. SHAH AND (MRS.) NARGIS HUSSAIN

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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The absorbance of serpentine in 5N acetic acid at 307 m μ has been used for the submicro spectrophotometric determination of this substance in 'Serpajmaline' which is predominantly a mixture of serpentine, serpentinine and ajmaline. Serpentinine which also absorbs at 307 m μ is separated from the complex through electrophoresis. The extent of interference due to ajmaline in the UV absorbance measurements of serpentine has been determined. The method is accurate within $\pm 1-2\%$.

BUFFER ACTION OF SAPONINS

Part I.—Analytical Studies

M. ARSHAD A. BEG AND AMIN R. SHAIKH

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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The buffer action of saponins has been described. They are found to be useful buffers in the range of 2.5 to 4.75 pH units and have a β -value of 0.074 at a concentration of 1.0% for dilute acid-base reactions. The buffer capacity has been compared with known buffers and it has been noted that a mixture of saponin and sodium acetate has a value of 0.1 for 2.5 to 5.6 pH units which is a considerable improvement in the activity and range of the individual buffer systems.

COMPARATIVE MEASUREMENTS OF THE TEMPERATURE DERIVATIVES OF VISCOSITY, DENSITY AND REFRACTIVE INDEX OF PURE LIQUIDS AND SOLUTIONS

Part III.—Preliminary Investigation of the Temperature Derivative of Refractive Index of Dilute Aqueous Alcohol

(MRS.) Z. HAIDER AND M.M. QURASHI*

Physics Division, Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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In previous work on pure water and pure ethylene glycol there was some evidence of correlation between E_η , $\frac{\partial n}{\partial T}$ and β , the coefficient of dilatation. In order to explore the interrelationship between these properties and their physical basis, it was desirable to study $\frac{\partial n}{\partial T}$, the temperature variation of refractive index, for dilute solutions of aqueous ethyl alcohol, for which data on activation energy is already available. Differential measurements $= \frac{\partial n}{\partial T}$ have been made with the help of a Pulfrich refractometer for five different concentrations of dilute aqueous ethyl alcohol, using sodium yellow light. The $\frac{\partial n}{\partial T}$ curves obtained for these solutions are almost sinusoidal. These, when compared with the activation energy curves of solutions of similar concentration, show, that the minima of $\frac{\partial n}{\partial T}$ curves are very nearly coincident with the jumps in the corresponding E_η curves.

STUDIES ON REACTION OF RESINS WITH DRYING OILS

Part I.—Influence of Catalysts on the Reaction between Linseed Oil and Ester Gum

M. ASLAM AND S. ALI HUSSAIN, *Paints and Plastics Research Section*

AND

S. A. A. CHISHTI, *Physics Research Division*

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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The reaction between ester gum and linseed oil has been studied in the presence of catalysts such as litharge, manganese dioxide and cobalt acetate. Powers'⁶ method has been used for evaluating the extent of reaction between resin and oil. The present investigations show that these catalysts and litharge in particular can influence the course of the reaction considerably and can therefore be used for the formulations of improved oleo-resinous varnishes.

GENETIC VARIATION AND ITS INFLUENCE ON PROTECTION BY L-CYSTEINE AGAINST GAMMA RADIATION

NOORUL HASAN MAHMOOD*, S.M. IFZAL AND FAKHRUL ISLAM

Radiobiology Division, Atomic Energy Centre, Lahore

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Four closely related strains of *Escherichia coli* have been used in these studies. The effect on the survival of bacteria after treatment with different bacteriostatic and bactericidal agents viz: - radiation, H_2O_2 , penicillin and heat was studied. An attempt has been made to correlate genetic constitution of the cells to H_2O_2 sensitivity, radiation response variability and protection by the—SH containing amino acid. It has been shown that the surviving fraction of these strains if previously treated with the protective agent shows a range in protection ratio depending upon the strain chosen, under similar experimental conditions.

AMINO ACID COMPOSITION OF PROTEINS OF "CHAR MAGHAZ" (CUCURBITACEAE SEEDS)

SAJJAD HUSSAIN, MUHAMMAD ARSHAD AND KARIMULLAH

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

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The seed proteins of four species of Cucurbitaceae (melon, water melon, cucumber, pumpkin) were analysed. Thirteen amino acids *viz.*, arginine, histidine, lysine, threonine, leucine, isoleucine, valine, tyrosine, tryptophane, phenylalanine, methionine, proline and cystine were identified. As is evident, all the essential amino acids were present in the proteins isolated from the seeds.

BIOCHEMICAL AND NUTRITIONAL STUDIES ON EAST PAKISTAN VEGETABLES

Part II.—Distribution of Protein and Non-Protein Nitrogen in Different Parts of Vegetables

H.N. DE, EMDADUL HAQUE BHUIYA AND J.C. DEBNATH

Food and Fruit Research Division, East Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Dacca

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The distribution of crude and true protein contents in different parts of fruity and leafy vegetables, like skin, flesh etc., have been evaluated by determination of total and non-protein nitrogen contents. The results show higher concentration of total nitrogen in the skin and leafy portions of the vegetables. The distribution of non-protein nitrogen reciprocally showed lesser contents in skin and leaves, and more in the fleshy portion and in the stem, with the ultimate result of more content of true protein in skin and leaves. The leaves of some plants like water hyacinth, jack fruit, banyan, banana etc. consumed by the bovine population were also similarly analysed and the results show high level of nearly 7.7 percent crude protein in jack fruit leaves with moisture content of 46 percent in contrast to low content of 1.8 percent in water hyacinth having moisture content of nearly 90 percent. The NPN contents in the leaves of these plants were also low like other leafy vegetables. The significance of these findings in the feasibility of bulk extraction of protein from the above sources has been discussed.

STUDIES ON THE PRESERVATION OF CHAPATIES

MUHAMMAD YASIN, ABDUL HAMID KHAN AND KARIMULLAH

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

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The preservation and keeping qualities of chapaties were studied at room temperature (maximum 33°C. and minimum 18°C.) and at 37°C. over a period of one week. The effect of various preservatives, softening agents and storage conditions was studied. The chapaties containing 0.15 percent sorbate or propionate, milk, G.M.S. and 1.5 percent of salt kept well for the desired period.

STUDIES ON SOME OF THE CHEMICAL CHARACTERISTICS OF HASHTNAGRI WOOL FIBRES AND THEIR INTERRELATIONSHIP WITH FINENESS

ARJAMAND KHAN AND MUZAFFARUL HAQ

Wool Research Division, North Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Peshawar

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Studies have been made on various samples of Hashtnagri wool, obtained from the home tract of the breed. Eight representative samples were analysed for moisture, ash, nitrogen, sulphur, wool wax, suint and scouring loss. The fineness or diameter of each representative sample was measured. The relationship was established between chemical constituents and fineness or diameter of the wool. It was found that wool with finer fibres contained higher percentages of sulphur, wool wax, suint and scouring loss but a smaller amount of ash than the wool with coarser fibres. In various samples, the moisture content was different whilst the nitrogen content was constant.

STUDIES ON THE CHARACTERISTICS OF HARNAI WOOL AND ITS STANDARDISATION FOR CARPET MANUFACTURE

MUMTAZ AHMAD KHAN AND ARBAB ABDUL WAKIL

*Wool Research Division, North Regional Laboratories, Pakistan Council of Scientific and Industrial Research,
Peshawar*

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Sixty five samples of Harnai wool, collected from the sheep home tract i.e. Quetta and Kalat Division of West Pakistan, have been tested. About 53,000 fibres were tested for percentage proportion of the four types of wool, viz. true, heterotypical, medullated and kemp, and 12,000 fibres for average fibre diameter of body wool, 5,500 for diameter and lengths of true wool, 3,500 and 2,800 fibres for diameter and lengths of heterotypical and medullated wool fibres, respectively. Comparing the data with that of carpet standard, it was found that Harnai wool is best suited for carpet manufacture.

STUDIES ON THE REDUCTION OF BARYTES WITH CHARCOAL

S.M. ALI AND SHAUKAT AZIZ

Mineralogical Research Division, North Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Peshawar

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The conditions for the reduction of barytes with carbon have been studied. The use of 35 percent carbon at 850°C. for duration of 2.5 hours gives 90 percent reduction. At 900°C., 97 percent reduction is obtained in 2 hours with 35 percent carbon.

SHORT COMMUNICATION

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OSMIC ACID AS A COLORIMETRIC REAGENT FOR THE DETERMINATION OF ASCORBIC ACID

ABDUL MAJID NADIM AND MAHMOOD-UL-HASSAN

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

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DETERMINATION OF ANTIMONY IN THE PRESENCE OF BISMUTH*

S.S.M.A. KHORASANI

Department of Chemistry, University of Dacca

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STUDIES ON THE TENSILE CHARACTERISTICS OF BIBRIK WOOL

A.A. WAKIL, FAIZULLAH KHAN, TAJ ALI WAZIR AND MIAN TAJ YOUNIS

North Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Peshawar

(Received December 10, 1964)

**PREPARATION AND BIOLOGICAL EVALUATION OF A PROTEIN ISOLATE FROM
COMMERCIAL OIL-SEED CAKES**

S. MAQSOOD ALI, IFTIKHAR ALI SHEIKH, M. ARSHAD AND M. ASLAM

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

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A NOVEL REARRANGEMENT REACTION

ASLAM BUTT AND I. A. AKHTAR

Drugs and Pharmaceutical Research Division, Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

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A NOTE ON THE NATURE OF BONDING IN LEATHER

M. ARSHAD A. BEG

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

(Received March 5, 1965)

**SCOPE FOR GROWING AUTUMN POTATOES UNDER ORDINARY CONDITIONS IN THE
PESHAWAR VALLEY**

MUHAMMAD IBRAHIM BAJWA

Agricultural College, Peshawar University

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