

Essential and Trace Elements in Different Pulses, Spices and Vegetables

M.Z.A. CHOWDHURY*, Z.A. SIDDIQUE, A. DAS GUPTA, SUSMITA CHAKRABORTY
AND Q. SOWKAT HOSSAIN

*Department of Chemistry, University of Chittagong, Chittagong, Bangladesh
M. Enayetul Islam, BCSIR Laboratories, Chittagong, Bangladesh

Abstract

The amounts of bio-chemically important elements for human bodies such as Na, K, Ca, P, Mg, Fe and Cu in some widely used pulses and spices in Chittagong were determined by using flame photometry and UV-Visible spectrophotometry. Similarly, the amounts of Mg, Fe and Cu in some leafy and non-leafy vegetables available in Chittagong were determined by the UV-Visible spectrophotometric method. The essential elements such as Na, K, Ca and P were found in mg/kg levels. The amounts of trace metal such as Mg, Fe and Cu in pulses and spices were just within the range of human necessity. However, the amounts of Mg, Fe and Cu in leafy and non-leafy vegetables were so negligible that they can not be considered as adequate for health, except their food-values constituted by the higher contents of starch.

Characterization of Metal Exchanged Zeolite-A using Quantasorb and Mercury Porosimeter

G. YASMEEN¹, S. HAFEEZ¹, N. IKRAM¹, T. M. ANSARI¹, A. K. KHATTAK². AND M.
AFZAL²

¹Department of Chemistry, Bahauddin Zakariya University, Multan 60800, Pakistan

²Department of Chemistry, Quaid-i-Azam University, Islamabad, Pakistan

Abstract

In this study, surface area and pore structure studies were carried out for cobalt, nickel, and copper-II-exchanged zeolite with the help of Quantasorb and Mercury Porosimeter techniques respectively. Values of surface area, micropore volume and characteristic energy for adsorbate-adsorbent system were calculated by using BET and D-R equations respectively. It was observed that surface area of metal-exchanged zeolite increases after outgassing at 300°C and decreases at high levels of metal concentration due to partial collapse of the structure at the temperature of dehydration in vacuum. It was evident from the data of mercury porosimetry that micropore volume increases as metal concentration increases. Results showed that metal exchanged zeolites have good adsorption properties than parent zeolite-4A. Therefore, transition metals after exchange create a new surface with different thermodynamics and kinetics.

Keywords: Characterization, Metal Exchanged Zeolite-A, Quantasorb, Mercury Porosimeter

Measurement of Densities and Partial Molar Volume of Paracetamol in different media

Q. M. MALIK* AND M. J. IQBAL

Department of Chemistry, Quaid-i-Azam University Islamabad, Pakistan

Abstract

The partial molar volume of Paracetamol (4-acetamidophenol) in water, 0.1 M HCl solution and 0.9% NaCl solution at 298.15K, 303.15 K, 308.15 K and 310.15 K have been evaluated with the help of vibrating tube densitometer Anton Paar (DMA 48). The effect of 0.1 M HCl solution whose pH is comparable with the pH of stomach and 0.9% NaCl solution is comparable with the isotonic solution of human fluid were checked. The results were fitted by the regression to equation that describe the plot (V_{ϕ} , T, m). At infinite dilution, partial molar volumes were obtained over the range of temperature by extrapolating these plots to $m = 0$ mol/kg.

Key Words: Densities, Apparent Molar Volume, Partial Molar Volume, Paracetamol, Solute-Solute Interaction and Solute-Solvent Interaction.

On Power-supply as Voltammograph

INAM-UL-HAQUE* AND GULZAR FATIMA

Department of Chemistry, University of Engineering and Technology, Lahore 54890, Pakistan

Abstract

Electrolytic oxidation of ferrocene in acetonitrile with or without supporting electrolyte in a quiet solution yielded nearly steady-state current-potential response at a platinum semimicro-disk anode. A short platinum wire, immersed in the same solution served as a quasi reference electrode. The investigation suggests that a two electrode configuration utilizing a power-supply unit furnishes results similar to those obtained with three-electrode configuration and a voltammeter.

Keywords: Ferrocene, acetonitrile, platinum-semi-microdisk anode, voltammograph

Determination of Dissociation Constants of Propionic Acid and Lactic Acid (2-hydroxypropionic acid) by Potentiometry and Conductometry

SAEEDUDDIN¹ AND A.W.K. KHANZADA²

¹Shah Abdul Latif Government College Mirpurkhas, Sindh, Pakistan

²National Centre of Excellence in Analytical Chemistry, University of Sindh, Jamshoro, Pakistan

Abstract

Dissociation constants of propionic acid and 2-hydroxypropionic acid (lactic acid) have been studied at different temperatures between 25 to 50 °C at 5°C interval. Propionic acid is analyzed by conductometry while 2-hydroxypropionic acid is analyzed by potentiometry. Both investigated compounds are symmetrical carboxylic acids having same length of carbon chain but are markedly different in ionic behaviour. We were interested to see how the hydroxyl group (-OH) induction in propionic acid affects on pKa values of 2-hydroxypropionic acid. We observed that as temperature increases pKa values increases. The increase is observed for both the investigated compounds. pKa values of 2-hydroxypropionic acid are lower as compared to propionic acid because of electron withdrawing group (-OH).

Quantification of Total and Water Extractable Essential Elements in Medicinal Plants Used for Stomach Problems

S.R. SAHITO^{1*}, T.G .KAZI¹, G. Q. SHAR¹, A.M. MANGRIO², M.S. SHAIKH³

¹Centre of Excellence in Analytical Chemistry, University of Sindh, Jamshoro-76080-Pakistan.

²Government Boys Degree College, Kotri, Sindh, Pakistan

³Model College Sindh University Hyderabad, Sindh, Pakistan

Abstract

The role of elements particularly trace elements in health and disease is well known. Present study has been undertaken in our laboratories to quantify the commonly occurring elements in three medicinal plants, *Peganum harmala* Linn, *Phyllanthus emblica* Linn, *Tamarix dioica* used for stomach problems using atomic absorption spectrophotometer. Wet digestion method has been used to extract the acid extractable metals. Samples were boiled in water to obtain water extractable metals. The validation of the method was checked with the NBS- 1570 (Spinach) as Standard Reference Material.

Levels of essential elements were found high as compared to concentration of toxic elements. The considerable amounts of essential elements such as calcium, magnesium, potassium, zinc and iron were found in all these plant samples.

Key words: Peganum harmala Linn., Phyllanthus emblica Linn, Tamarix dioica Roxb trace elements, A.A.S

Variation Profile of Low-Density Lipoproteins Cholesterol (LDLC) in Sever Psoriatic Patients

S.M. MAHESAR¹, M. UMAR DAHOT² AND M.Y. KHUHAWAR³

¹*Biochemistry Department Chandka Medical College Larkan, Sindh, Pakistan*

²*Institute of Biotechnology and Genetic Engineering University of Sindh Jamshoro, Pakistan*

³*Dr M.A. Kazi, Institute of Chemistry University of Sindh Jamshoro Pakistan*

Abstract

The measurement of the low-density lipoproteins cholesterol from the blood samples of normal and psoriatic patients males and females proceeded by adding polyvinyl sulphate to the sample which precipitates low density lipoproteins cholesterol. The concentration of low-density lipoproteins cholesterol (LDLC) was calculated from the difference between the serum total cholesterol and the cholesterol in the supernatant after centrifugation.

Key words: *Low density lipoproteins, Sever psoriasis, Blood samples*

Stabilizers Enhanced the Activity of Mutarotase Chracterized from Bovine Kidney Cortex

SADIA JAVED, M. ANJUM ZIA* AND KHALIL-UR-REHMAN

Department of Chemistry (Biochemistry), University of Agriculture, Faisalabad, Pakistan.

Abstract

The crude extract of mutarotase having 5.491 U/mL activity (1.264 U/mg specific activity) was subjected to sephadex G-150 column and obtained 16.518 U/mg specific activity. Optimum pH and temperature were 7.5 and 40 °C having maximum activity of 4.273 U/mL and 4.918 U/mL respectively. It was noted that, 200 mg substrate concentration showed highest activity 5.607 U/mL and that of 5.519 U/mL at 500 µL enzyme concentration. The study on effect of stabilizers showed that glycerol (15 %) as best one among sodium benzoate and sodium citrate with the activity of 3.71 U/mL even after 30 days.

Key Words: Mutarotase; Characterization; Stabilizers

Evaluation of Boiler Water Sample of a Thermal Power Station

M. AHSAN SIDDIQUI*, A.W.K. KHANZADA AND T.G. KAZI

National Center of Excellence in Analytical Chemistry,
University of Sindh, Jamshoro, Pakistan

Abstract

Due to the significance of feed water, a one year study was conducted for the analysis of boiler water of a typical Thermal Power Plant for pH, conductivity, silica, and phosphate using standard methods. The mean values of pH, conductivity, silica, and phosphate were 9.54, 15.63 $\mu\text{S}/\text{cm}$, 0.19 and 2.49 ppm respectively. These all values were within the recommended value by British Electricity International, London (BEIL).