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FLAME PHOTOMETRY AS TOOL FOR PHARMACEUTICAL QUALITY ASSURANCE

Nishat Chowdhury*[1], Shingo Ueno[2] and Md. Saiful Hoque[1]

[1]Department of Pharmacy, World University of Bangladesh, Green Road, Dhaka, Bangladesh.
[2]Department of Material Engineering, Saitama University, Saitama, Japan.

***Corresponding Author: Dr. Nishat Chowdhury**

Department of Pharmacy, World University of Bangladesh, Green Road, Dhaka, Bangladesh.

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ABSTRACT

The need for a rapid, accurate method to determine quantitatively Na and K present together in biological fluids has been met by the procedures to be described. Commercial intra and extra cellular fluid supplements were obtained and assayed for quality measurements. Calibration graphs in the range of 0.00–20 ppm were obtained. The pharmaceutical preparations should have been diluted. They were too much concentrated and accurate result was not found. Only presence or absence of an alkali metal could be found using the traditional calibration curve established by Dhaka University Centre for Scientific Research (CARS).

INTRODUCTION

The need for a rapid, accurate method to determine quantitatively Na and K present together in biological fluids has been met by the procedures to be described. The necessity of separating these elements prior to their determination by the various chemical methods usually employed has led to procedures which are often prohibitively tedious and time-consuming. The recent development of flame photometry has now made possible physical methods of analysis in which chemical separation of Na and K is unnecessary.[1,2]

Flame photometry is a process where in emission of radiation by neutral atoms is measured.

The neutral atoms are obtained by introduction of sample into flame.

A simple flow injection with flame photometric detection has been developed for determination of sodium, potassium, and total alkalies in portland cement, fly ash, admixtures, and water of concrete. A liquid sample or a digest of solid sample was injected into a water carrier stream which flowed to a flame photometer. A change in emission intensity at a selected wavelength was recorded as a peak. An amplifier circuit was fabricated, which helped improve sensitivity of the flame photometer. Calibration graphs in the range of 0.00–20 ppm were obtained. Relative standard deviations for 11 replicates of injecting potassium and sodium solutions were 1.69 and 1.79%, respectively.

Commercial intra and extra cellular fluid supplements were obtained and assayed for quality measurements.

Orsaline

Oral Rehydration salt; WHO & UNICEF approved new formula, **Contains**: 1.30 gm Sodium Chloride; 0.75 gm Potassium Chloride; 1.45 gm Tri Sodium Citrate, Di-hydrate; 6.75 gm Glucose, Anhydrous.

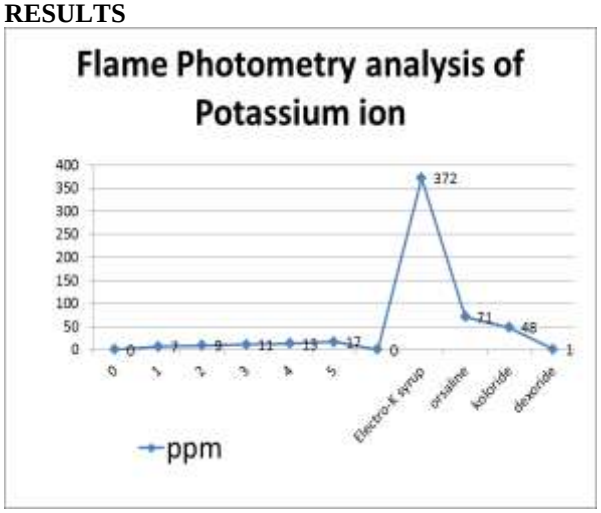
ELECTRO K

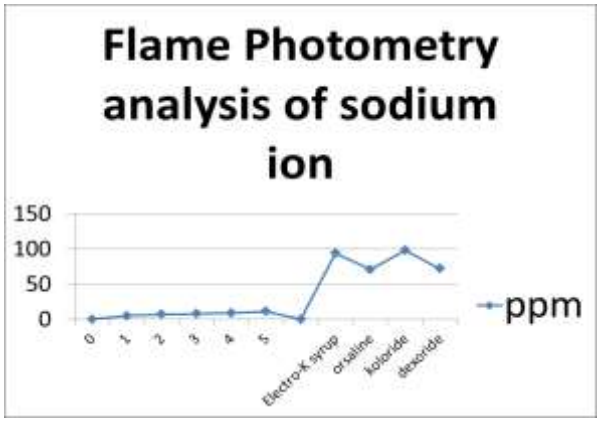
Syrup: Each 5ml syrup contains Potassium Chloride USP 500 mg equivalent to 6.7 mmol Potassium.

Koloride is a sterile solution of Sodium Chloride, Potassium Chloride and Sodium Acetate. Each 100 ml of solution contains Sodium Chloride BP 0.5 g, Potassium Chloride BP 0.1 g, and Sodium Acetate BP 0.393 g. The Solution contains per litre Sodium 134 mmol, Potassium 13 mmol, Chloride 99 mmol and Acetate 48 mmol.

Dexoride is a sterile solution of Dextrose and Sodium Chloride in water for injection. Each 100 ml of solution contains Dextrose Monohydrate equivalent to Dextrose Anhydrous B.P. 5.0 gm and Sodium Chloride B.P. 0.9 gm. This represents 5% Dextrose in isotonic Sodium Chloride solution. Approximate concentration of sodium and chloride ions in Dextrose is 150 mmol/ lit.

RESULTS





DISCUSSION

The pharmaceutical preparations should have been diluted. They were too much concentrated and accurate result was not found. Only presence or absence of an alkali metal could be found using the traditional calibration curve established by Dhaka University Centre for Scientific Research (CARS).