SHORT COMMUNICATIONS

Study of Variation in Blood pressure During Preoperative Anaesthetic Application using Lagrange's Interpolation

V. ARYA* AND A. MAHANTI**[1]
*Department of Pharmaceutical Science
**Department of Computer Science
Birla Institute of Technology

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Lignocaine belongs to the class of local anaesthetic drugs[1]. The present study attempts to correlate the administered dose of lignocaine and the subsequent alteration in blood pressure during preoperative anaesthetic application using Lagrange's interpolation.

LIGNOCAINE is generally administered before treatment of medical complications such as Lower Segment Ceasarean Section (LSCS) and appendectomy. The administered dose of lignocaine and the subsequent alteration in blood pressure can be correlated by the employment of Lagrange's interpolation, which precisely calculates the value of blood pressure F (x) at time 't' for those values of t for which F (x) is not available. F (x) can also be presented in the form of polynomial which can be evaluated for different values of x^2. Here it has been assumed that variation in blood pressure occurs only due to the injection of lignocaine and not due to other physiological factors which may cause an alteration in the blood pressure. However, if other physiological factors do make significant impact, F (x) can be effectively calculated by employment of regression analysis.

The software developed is used to serve a multitude of purposes. Given a set of data, we have the flexibility of interpolating and extrapolating. In the present, context, interpolation and extrapolation serve an exiguous purpose when compared with the methods application in other environments (i.e. drug development). Interpolation and extrapolation yield fairly accurate results within acceptable error limits. The above observation is made with respect to the particular algorithm used, namely Lagrange's Interpolation method[3].

We prepared a software for the analysis of the blood pressure variation using Lagrange's Interpolation method. To allow computation of extrapolated values, a module on Newton's Forward Difference/Newton's Backward Difference formula is included. It should be noted that if this software is used for analysis of the effect of any other drug, (one parameter dependent) modules can be included for the generation of computerised analysis.

The developed software provides an easy and effective method of calculating the blood pressure after injection of the local anaesthetic. Using this as a background, we can state that the software allows us to proceed with drug effect analysis in a much more convenient way. In such simulations, the possibility of computer analysis of the data generated can always be augmented as a separate module. This ensures the portability of the software to any drug environment which is one variable dependent. The portability factor of the software developed is further enhanced by the use of a structured programming language like C.

[1]For Correspondence:
Department of Computer Science
University of Saskatchewan
57 Campus Drive, Saskatoon, CANADA S7N 5A9

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Visible Spectorphotometric Method for the Determination of Lomefloxacin Hydrochloride in Pharmaceutical Preparations

A. RAJASEKARAN*, B. JAYKAR, S. DHANALAKSHMI, M. DEEPALAKSHMI, AND V. IRINE BEULAH
Periyar College of Pharmaceutical Sciences for Girls, Trichy-21.

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A new spectrophotometric method is developed for the estimation of lomefloxacin hydrochloride (LFLX) in pharmaceutical dosage forms. The method is based on the reaction of LFLX with 1 % w/v ferric nitrate solution in 1 % v/v nitric acid to form orange yellow coloured chromogen which exhibits absorption maximum at 445 nm. The formation of colored chromogen is due to the interaction of quinolone derivatives with polyvalent metal ion Fe++, to form water soluble complex[1]. The chromogen formed is stable. Beer's law is obeyed in the concentration range of 2-10 mcg/ml.

LOMEFLOXACIN[2-4] (LFLX) is a new synthetic antibacterial and it is chemically 1 - Ethyl - 6, 8 - difluoro- - 1, 4 - dihydro - 7 - (3-methyl-1-piperazinyl)- 4 - oxo -3-quinolone carboxylic acid monohydrochloride. It is widely used for the treatment of urinary tract infections and respiratory tract infections[5]. It is not official in any pharmacopoeias. Reported analytical methods include a spectrophotometric method[6], an extractive spectrophotometric method[7], a difference spectrophotometric method[8], and HPLC methods[9-15], In the present communication, the development of a visible spectrophotometric method and its application for routine analysis of LFLX in tablet formulation is described.

Analytical grade ferric nitrate was used. One % w/v solution of ferric nitrate was prepared by dissolving 1 g of ferric nitrate in 1 % v/v nitric acid in a 100 ml volumetric flask. A systronics single beam UV-VIS spectrophotometer was used for analysis.

*For correspondence

Stock solution of pharmaceutical grade LFLX was prepared by dissolving 50 mg LFLX in 50 ml with distilled water in a volumetric flask. Aliquots of standard solution representing 2-10 mcg/ml of LFLX were transfered into five separate 50 ml serially numbered volumetric flasks. One ml of freshly prepared 1 % w/v solution of ferric nitrate in 1 % v/v of nitric acid was added to each volumetric flask and the volume was made upto 50 ml with distilled water. The absorbance was measured at 445 nm against reagent blank.

For the analysis of tablets, 50 mg equivalent of the tablet content was transfered into a 50 ml volumetric flask and it was dissolved and made upto 50 ml with distilled water and filtered. 0.2 ml of the filtrate representing 4 mcg/ml was pipetted out into a 50 ml volumetric flask and 1 ml of 1 % w/v ferric nitrate in 1 % v/v nitric acid was added and the volume was made upto 50 ml with distilled water. Then the absorbance was measured at 445 nm against a reagent blank.