A SOFTWARE FOR AUTOMATIC CALCULATION OF EFFECTIVE RENAL PLASMA FLOW WITH ^{131}I-HIPURAN

J.L. Gómez Perales[1], A. García Mendoza[2], P Valderas Montes[1], J.A. Furest Perez[1]

[1]Nuclear Medicine Service. " Puerta del Mar" University Hospital (Cádiz, SPAIN)

[2]Nuclear Medicine Service, "San Cecilio" University Hospital (Granada, SPAIN)

INTRODUCTION:

Effective Renal Plasma Flow (ERPF) studies with ^{131}I-Hipuran are performed in a large number of hospitals throughout the world. The calculation of the ERPF using the bicompartmental model proposed by Sapirstein is not very complex, but tedious and time-consuming.

OBJETIVE:

The goal of this work is to develop a computing facility to automatically calculate ERPF, using the bicompartmental model proposed by Sapirstein.

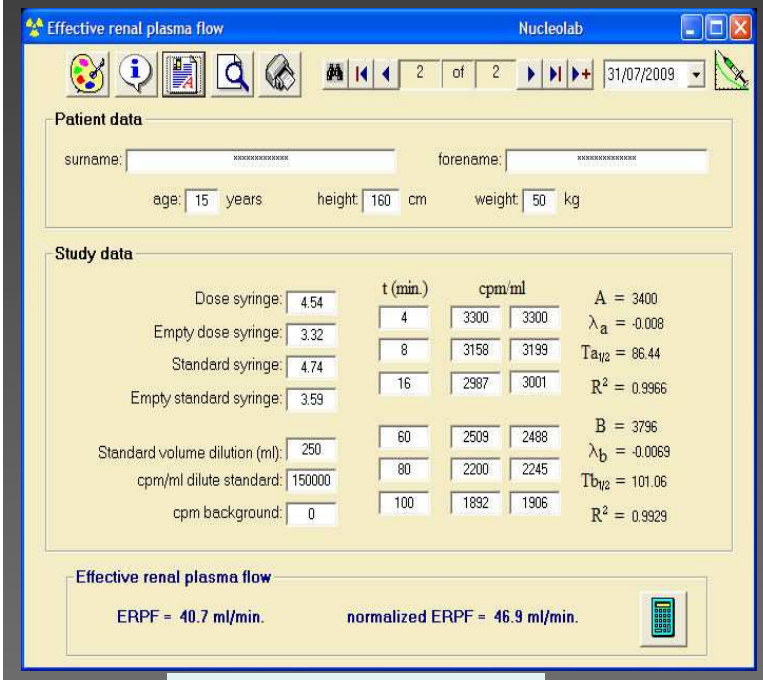


Figure 1: Form of Nucleolab

MATERIALS AND METHODS:

For developing a software incorporating these calculations we have used Visual Basic 6.0 and Visual Studio Installer.

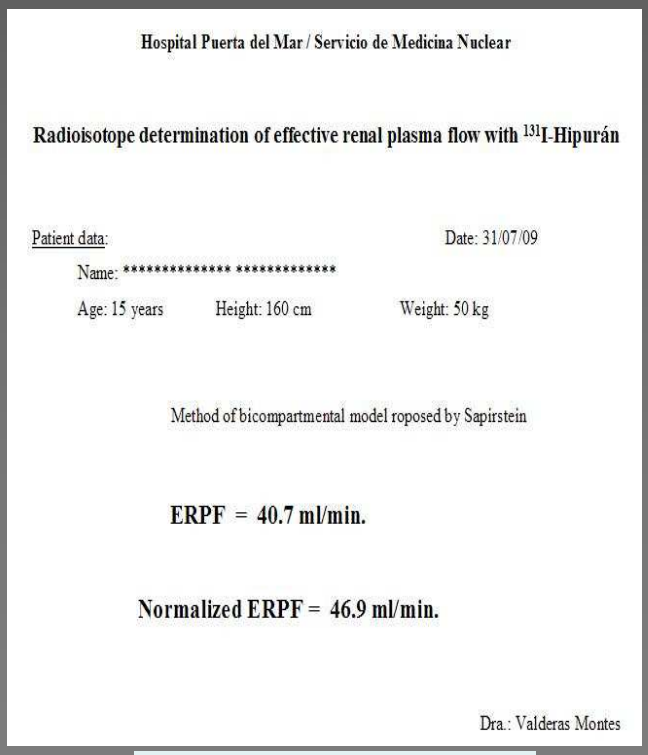
FPRE = I λ a λ b (A λ a + B λ b) = I ln2/(A $T_{1/2a}$ + B $T_{1/2b}$)

A_t= A e $^{-\lambda at}$ (fast exponential)

B_t= Be $^{-\lambda bt}$ (slow exponential)

I= doses in cpm

λ = ln2 / $T_{1/2}$



Hospital Puerta del Mar / Servicio de Medicina Nuclear

Radioisotope determination of effective renal plasma flow with ^{131}I-Hipurán

Patient data: Date: 31/07/09

Name: ********** **********

Age: 15 years Height: 160 cm Weight: 50 kg

Method of bicompartmental model roposed by Sapirstein

ERPF = 40.7 ml/min.

Normalized ERPF = 46.9 ml/min.

Dra.: Valderas Montes

Figure 2: Report of ERPF

RESULTS:

We have developed a form for automatic calculation of ERPF. This form relies on a database to store, manage and retrieve the data of ERPF studies. Moreover, this form offers the possibility of printing a detailed report of each study. This form is included in a software called **Nucleolab**, which is available at:

www.radiofarmacia.org/nucleolab-english

CONCLUSION:

The software we have developed has an easy-to-use interface, that makes the calculation complexity of ERPF studies completely hidden for the user, saving you the time that you previously spent on these laborious calculation and reducing the risk of error.