Abstract

Introduction

Pharmacokinetics is an essential part for pharmacists' knowledge. accurate understanding can lead to better estimation of drugs' response and more accurate dosing. Using computer-based simulation systems for high quality education is a preferred tool that is widely used in today's world. in this thesis, an attempt has been made to develop a web-based software for simulating the plasma concentration of drugs upon administration.

Methods

HTML, CSS, jQuery and Bootstrap are used to develop the front-end or user side of this system. The aim was developing a good design of user interface which is attractive to users. However, in the back-end or server side, Python and its popular framework, Django, have been used. an effort has been made to develop a library for pharmacokinetic calculations to perform the necessary calculations on the server side. The simulator has four different modes: single patient simulator, multiple patient simulator, therapeutic dose monitoring and Custom ADME Plotting.

Results and Discussion:

The simulator was made available via url: http://www.pharmsim.ir .The results of the simulation for acetaminophen, digoxin and alprazolam were compared with the data of the articles and the results were within the range of the articles. Also, after a survey of medical and pharmacy students, this simulator has received a score of 18.5 out of 20.

Conclusion:

It seems that Pharmsim as a simulator for drugs' plasma concentration after various administration modes, could be useful tool for pharmacist and physicians for better understanding of pharmacokinetics knowledge.

Keywords:

simulation, pharmacokinetics, plasma concentration, concentration-time curve