Novel techniques for predicting human intestinal absorption

D S Shokry, L J Waters and G M B Parkes
University of Huddersfield, UK

Estimation of human intestinal absorption is very important especially for orally administered pharmaceutical compounds with poor solubility. Therefore, in preformulation studies the extent of drug absorption must be determined for new drug entities (NDE). The use of animals has been the most abundant method used in preformulation studies for determination of pharmacokinetics, especially the rate and extent of intestinal absorption of pharmaceutical compounds. In this work, using the biodetergent-based micellisation with a form of chromatography known as Micellar Liquid Chromatography and the use of the solubilizing capacity of these biodetergents and its determination using UV-spectrophotometry were found to be successful in the prediction of human intestinal absorption. Bile salts were used as a mobile phase in the MLC chromatographic method to provide an environment more closely simulating the human intestinal environment. In this method, intestinal absorption was successfully predicted by the use of a group of model compounds through measurement and calculation of the partition coefficient, Pmw. While in the spectrophotometric method the solubilizing effect of one bile salt was quantified and used in the calculation of the partition coefficients (log Kxm/a) of a number of model drugs which were then used in the construction of a statistical model for the prediction of human intestinal absorption. Another method used for prediction of human intestinal absorption was a permeation method using flow through or Franz cells using drug-sodium deoxycholate based polymer where the permeability constant Kp was obtained for number of drugs and used in statistical modelling of human intestinal absorption.

Biography
Dina Shokry had her Bachelor degree in Pharmacy in 2009 from Ain Shams University then completed her Master’s degree in Analytical Chemistry from Cairo University in 2013. Now she is about to finish her PhD as a member of Dr Waters group for finding alternatives to animal testing at Huddersfield University. She worked as a teaching assistant then as an assistant lecturer of Analytical Chemistry at Future University. She produced high quality research that was published in a number of reputed peer reviewed journals. She presented her work in nine conferences. Her work is focused on developing models for prediction of human intestinal absorption through in vitro-in vivo correlation studies, which has economic impact in the pharmaceutical industry field. She developed prediction models from MLC, solubilization and permeation studies where the obtained in vitro data correlated well with the in vivo absorption data and resulted in two recently published papers.

Dina.shokry@hud.ac.uk

Notes: