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Bile salt: A biosurfactant or a pharmacokinetic predictive tool

Dina Shokry, L J Waters and **G M B Parkes**
University of Huddersfield, UK

Most of the new released drug compounds are formulated as orally administered drugs due to the convenience of the oral administration route. However, the properties of some compounds could be incompatible with oral administration. In fact, major financial losses were suffered by pharmaceutical industry because some new drugs were discovered to have poor bioavailability after their oral administration when tested in later clinical stage of development. Therefore, drugs with poor aqueous solubility and oral bioavailability that are considered poor candidates should be spotted as soon as possible before reaching final clinical stages of development where the costs spent on research carried out in such stages for studying the biopharmaceutical properties of the drug is significantly high, it is even better to discover these properties before the drug is synthesized to save time and money. Over the past three decades, there has been growing interest in the prediction of the biopharmaceutical properties as aqueous solubility and intestinal permeability of new drug entities (NDE) that resulted in the development of a large number of experimental (in vitro and in situ) and mathematical models. In addition to being cost effective and time saving, some of these models help in the determination of best drug candidates during drug discovery and development stage. Drug intestinal permeability is one of the most important biopharmaceutical properties that are worth investigating and predicting using the previously mentioned models. In the spectroscopic and permeation methods, we developed mathematical models generated for prediction of human intestinal absorption (HIA) through the determination of the micelle/water partition coefficients (logKxm/a) for a series of 20 compounds using UV spectroscopy and also through determination of the permeation constants (log Kp) of a number of drugs through gels made from bile salt saturated with infinite dose of these drugs. Prediction models with good predictability were developed using the obtained data from both methods along with the reference absorption data and other physicochemical properties to develop prediction equations through simple and multiple linear regression respectively. In another work, we developed a model using MLC method which was proved successful for prediction of HIA.

Biography

Dina Shokry completed her Bachelor degree in Pharmacy in 2009 at Ain Shams University then Master's degree in Analytical Chemistry at Cairo University in 2013. Now, she is about to complete 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 and 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

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