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Application of first order one compartmental fitting equation to convolute and validate *in vitro-in vivo* correlation of water insoluble sustained release drug formulation

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The experimental study presents a brief and comprehensive perspective on the methods of developing a Level A *in vitro-in vivo* correlation (IVIVC) for extended oral dosage forms of water insoluble drug domperidone. The study also evaluates the validity and predictability of *in vitro -in vivo* correlation using the convolution technique by one compartmental first order kinetic equation. The IVIVC can be substituted as a surrogate for *in vivo* bioavailability study for the documentation of bioequivalence studies as mandatory from any regulatory authorities. The *in vitro* drug release studies for different formulation (fast, moderate, slow) were conducted in different dissolution medium. The f (2) metric (similarity factor) was used to analyze the dissolution data for determined by using Liquid chromatography mass spectrometry (LC/MS) methods. The absorption rate constant and percentage of absorption of drugs at different time intervals were calculated by using data convolution. *In vitro* drug release and *in vivo* absorption correlation were found to be a linear correlation model which was developed by using percent absorbed drug release versus percent drug dissolved from the three formulations. Internal and external validation was performed to validate the IVIVC.Predicted domperidone concentrations were obtained by convolution technique using first order one compartmental fitting equation. Prediction errors were estimated for C_{max} and AUC_{0-∞} were found to be within the limit.

Biography

Anirbandeep Bose has completed his Ph.D.on the year of 2010 and worked as an Asst. Prof. in NIPS, Bhopal, India for 2 years. At present he is working as a post doctorate fellow in Non-destructive biomedical and pharmaceutical research centre, Universiti Teknologi MARA, 42300 Puncak alam, Selangor, Malaysia. He has published more than 30 papers in reputed journals and attended many conferences.

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