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Comparitive study of analytical methods to monitor Rivastigmine uptake

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Introduction: Nanoparticles have been used extensively in various pharmaceutical applications due to physiologically compatible properties. This new form of delivery holds great promise in improving drug delivery and therefore activity (1). A limitation of nanoparticle drug formulation to reach CNS is its uptake by reticuloendothelial system, which removes a large portion of the drug from vascular space and limits their exposure to cerebrovascularature. As a result, only a limited portion of the drug reaches the brain (2). In addition, the physiochemical characteristics of the delivery system such as molecular weight, size, affinity and lipophilicity are not always suitable to allow its passage through the human BBB (3). Therefore, a valid method of monitoring drug delivery is essential; actually assess their permeability across *in vitro* BBB models.

Aim: To develop an accurate analytical method to measure the concentration of Rivastigmine to monitor uptake.

Methods: Comparative analysis using GCMS/MS and Spectrophotometry technologies was carried out by comparing calibration curves obtained using ranges of physiological concentrations of Rivastigmine, accuracy was determined by precision and stability tests with both methods.

Results: Inter days and intra days unknown drug samples were assessed to set up an in-house standard curve using different solvents (Methanol, GC grade water and PBS). Different concentrations ranged from 1ng and 1mg were used to set up a calibration curve.

Conclusion: This study demonstrates that in the instance, the spectrophotometer is more suitable than GCMS/MS to measure the concentration of Rivastigmine in different solvents within the Physiological range.

References:

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