Summary

The thesis is mainly focused on haemolysis effect of drug and its impact during bio analysis in plasma. Different drugs were selected especially nature to create haemotic anemia in human body. Methods were developed for the selected drugs and were validated especially to nullify matrix effect (haemolysis effect).

During method validation haemolysis effect of the plasma against normal plasma for the comparison purpose was carried out. Supporting validation parameters like precision, accuracy, selectivity, stabilities etc. were performed during method validation.

Safe and effective dose of selected drugs with different types of formulations (tablet, capsule, oral suspension) were given to healthy volunteers as bio equivalence study with normal two way cross over design.

At different time points blood samples were collected, followed by sample separation with proper anticoagulant to separate the required quantity of plasma from whole blood. From individual plasma samples haemolysed samples were identified and summarized.

Based on validated methods, haemolysed sample analyses were perform to evaluate drug concentration time profile. Haemolysed samples were again repeated as per ISR guideline to check the method reproducibility. The results of initial analyzed samples were compared with the results of repeated samples.

Different drug formulations like amoxicillin & clavulanic acid tablet (antibiotic), erythromycin ethylsuccinate oral suspension (antibiotic), metformin tablet (anti diabetic), mefenamic Acid capsule (Non steroidal anti-inflammatory drugs NSAIDs), doxycycline tablet (antibiotic) and rasagiline tablet (antiparkinson Agents) were selected to evaluate haemolysis effect.

Results of incurred sample reanalysis for amoxicillin & clavulanic acid, erythromycin ethylsuccinate, metformin, mefenamic acid, doxycycline, rasagiline are found within acceptance criteria.

To nullify the haemolysis effect different extraction techniques were used during method development. Solid phase extraction technique was found suitable for amoxicillin and clavulanic acid, erythromycin, mefenamic acid, doxycycline and rasagiline where as protein precipitation technique was found more suitable for metformin interms of getting good recovery and less haemolysed effect. During matrix effect study for selected drugs no interference peak was found for analyte with selected IS and were well detected and quanified in haemolysed plasma.
The outcome of the thesis demonstrates that haemolysis effect is a specific type of matrix effect that can make impact on the assay, therefore elimination of the haemolysis effect is a must in regulated bio analyses which required analytical approach.