WORK PLAN AND METHODOLOGY

- Literature Survey
- Selection of API (drug) and Excipients
- Preformulation Study:
  Developing Preliminary formulation information by testing of selected drug & excipients.
- Characterization of Drug:
  By appearance, M.P determination, solubility, pH, LOD, FTIR, Analytical method development (UV spectroscopy).
- Determination of Saturation solubility of Drug
- Preparation & characterization of biodegradable copolymer:
  It will be prepared by precipitating out PLLA/chitosan from acetic acid–DMSO mixtures with acetone. The blends will be characterized by Fourier transform infrared analysis (FTIR), X-ray photoelectron spectroscopy (XPS), differential scanning calorimetry (DSC), Nuclear Magnetic Resonance (NMR) and X-ray diffraction (XRD).
- Preparation of drug loaded polymersomes from the prepared copolymer:
  It will be prepared by solvent injection method.
- Particle size analysis:
  It will be done by SEM (Scanning Electron Microscopy) & Dynamic light scattering (DLS) measurements.
- Zeta potential measurement:
  The electrophoretic mobility (μ) will be converted to the zeta potential (ζ) using the Smoluchowski approximation equation.
- Determination of drug loading and encapsulation efficiency:
  It will be performed by U.V spectrophotometry measurement.
- Drug release study:
  It will be studied by USP II dissolution apparatus.
- In vitro hydrolytic degradation of copolymer:
  By soaking in aqueous medium for specified time & confirming with NMR studies.
- **Cytotoxicity assay of polymersomes:**
  The MC3T3 cells will be used for cytotoxicity studies.

- **Development of Polymersomes based Felodipine Controlled Release Tablet:**
  It will be done by direct compression technique.

- **Characterization of Controlled Release Tablet**
  It will be done by Weight variation, Friability, Thickness, Hardness & Dissolution study.

- **Stability of the drug loaded polymersomes and Polymersomes based Felodipine tablet:**
  It will be done as per the ICH guidelines.

- **Preparation and characterization of Mefenamic acid loaded polymersomes:**
  It will be prepared by solvent injection method & characterized by DLS, SEM measurements, Zeta potential measurement, Determination of drug loading and encapsulation efficiency, & Drug release study.

- **Development & Characterization of Polymersomes based Mefenamic acid Parenteral preparation:**
  It will be developed in a optimized parenteral & characterized by clarity, sterility test, & drug release study.

- **In vivo testing of Polymersomes based Mefenamic acid Parenteral preparation**

- **Stability studies of Polymersomes based Mefenamic acid Parenteral preparation:**
  It will be performed as per ICH guidelines.