3. OBJECTIVE

Following intramuscular administration of a unit 500 mg or 1 g dose of cefotaxime injection to normal volunteers, mean peak serum concentrations were attained within 30 minutes (11.7 and 20.5) mcg/mL respectively. About 60% of the given dose was excreted from urine during the first 6 hours following the start of the infusion. Approximately 20-36% of an IV dose of cefotaxime is excreted by the kidney as unchanged cefotaxime and 15-25% as the desacetyl derivative. The desacetyl metabolites also contribute to the bactericidal activity. Two other metabolites account for about 20-25%. They lack bactericidal activity. The maximum adult dosage should not exceed 12 grams/day.

Intraperitoneal chemotherapy prolongs survival of ovarian cancer patients, but its utility is restricted by treatment-related complications and inadequate drug penetration in larger tumors. The present report describes the development of paclitaxel-loaded microspars designed for intraperitoneal treatment. These advantages may help to remove the need of permanent catheter, reduce the local toxicity, and better the compliance of patients and medical staff.

These combined features resulted in the following advantages over paclitaxel/Cremophor: greater tumor targeting (16-times higher and more sustained concentration in tumors), lower toxicity to intestinal crypts and less body weight loss, greater therapeutic efficacy (longer survival and higher cure rate), and greater convenience (less frequent dosing). Tumor-penetrating microparticles may overcome the toxicities and compliance related problems that have limited the utility of intraperitoneal therapy.

Nevertheless these formulations are quite seldom in revealing the complications associated with treatment. Basically, the complications of cefotaxime is associated with the risk of maximum dose of 12grams/day could do some significant damage to the cells and more complicates the disease. Inversely, making use of the novel drug delivery system which reduces the dosage regimen in treating the chronic disease is a great challenge. With diversity of biodegradable polymers accessible for the object of protecting and enhancing the drug molecules to which it is used. The polymeric systems really increase the solubility, bioavailability and safeguard the drug from gastrointestinal enzymes. Such advantageous method of polymeric system with microparticles has some remarkable benefit over the other existing methods.

The challenges are capable, particularly those related to the growth of suitable recognition layers. Useful recognition groups attached to the microparticles must be loaded to a
high density while maintaining their characteristics. The potential use of nano- and microparticles from significant advantages such as:

(i)  the capability to target specific locations in the body;
(ii) the reduction of the drug amount require to achieve a particular concentration in the near of the target; and
(iii) the decrease of the concentration of the drug molecules at non-target sites minimizing severe undesirable effects.

The actual purpose is to prepare the antibiotic drug cefotaxime incorporated microparticles by solvent evaporation method with selected excipients and solvent system. Further, characterization, evaluation including in vitro release profile of the formulation. Besides, stability studies like DSC (Differential Scanning Calorimetry), Stress testing (ICH- Guidelines) is included in this research work.