2. AIM OF PRESENT WORK

In present work, an attempt is made to develop nanoparticulate drug delivery system for targeting breast tumors, using anticancer drugs, Anastrozole, Colchicine and Docetaxel.

Polymeric nanoparticles are prepared with the aim of targeted delivery and prolonged action. The proposed formulation is dry powder for injection (1 ml ampoule) to be administered intravenously containing lyophilized nanoparticles of drugs in the dose of 1 mg/ml, 2 mg/ml and 20 mg/ml for anastrozole, colchicine and docetaxel respectively.

The proposed drug delivery system is supposed to be efficient with following characteristics:
- Exhibit longer circulation of time with the help of PEGylation
- Show reduced toxicity of anticancer drugs because of site specificity
- Have patient compliance to reduced side effects
- Reduced dosage frequency of drugs due to long circulating effect.
- Provide better therapeutic effect

The specific research objectives of present work include,
2. To design and develop chitosan and gelatin nanoparticles.
3. PEGylation of chitosan and gelatin.
4. To prepare drug loaded chitosan and gelatin nanoparticles.
5. Characterization of optimized formulations of nanoparticles
6. Lyophilization of PEGylated nanoparticles and optimization
7. To compute the drug release kinetic mechanism from these controlled release formulations
8. To perform short term stability study for all PEGylated and non PEGylated optimized formulations.
9. To perform in-vitro study of PEGylated and non PEGylated formulation and compared with drug solution using MCF-7 breast cancer cell line.
10. To perform in-vivo study of pegylated formulations.
In the present study, polymeric nanoparticulate system is prepared for three anticancer drugs Anastrozole, Colchicine and Docetaxel with the aim of,

- Prolonged action upto 1 week
- Reduced dosing frequency, more patient compliance
- Site specificity (Reduced side effects)
- Longer circulation time (more efficient)