8.0 SUMMARY OF RESEARCH WORK

8.1 Analytical method development and Pre-formulation study
Simultaneous UV method was developed for ACE+DIA and ACE+LEF combination dosage forms. For herbal formulation reported HPLC method was evaluated. Further reported HPLC method was applied for the estimation of plasma concentration for ACE and LEF.
Initial drug properties of drugs were evaluated and summarized. Based on the properties, suitability of dosage form and manufacturing process were finalized. Initial compatibility study was carried out between drug-drug and drug-excipients for all three dosage forms and found no significant degradation or changes in initial compatibility study.

8.2 Development and characterization of dosage forms
Individual tablets were developed for ACE, DIA, LEF and SAG. Combination treatment was achieved by Tablet in tablet formulation (TIT). First ACE+DIA combination was developed in form of pulsatile drug delivery system. Single pulse and multi pulse dosage forms were developed by optimizing two different coating systems i.e. pH sensitive (Eudragits) and Surface eroding (Ethyl cellulose). Desired lag phase was achieved with multi pulse system for ACE+DIA.
At all the stages intermediate dosage forms were characterized for physico-chemical properties. At each stage, optimization was carried out for CMAs and CPPs and control strategies were defined. Stability study was also carried out on final dosage forms and found satisfactory. Desired in vitro release was achieved w.r.t. pulsatile release dosage forms.
In the similar way, another combination treatment ACE+LEF was developed in to multi pulse delivery system and characterized. Herbal formulation containing salai gugul was developed in the form of pulsatile drug delivery system. Herbal formulation was characterized for physico-chemical evaluation including HPTLC, TLC DSC and micro biology study.
8.3 Comparative Evaluation of Developed Dosage forms

Three different dosage forms ACE+DIA, ACE+LEF and Herbal formulations were developed in form of pulsatile release dosage forms. In-vivo X-ray study was carried out to evaluate the lag phase. Further to select the best treatment, Arthritic model was developed and comparative dynamic study was carried out. Combination treatment with ACE+LEF proved best treatment in arthritic condition. Further, in vivo kinetic study revealed that desired lag phase was achieved in two pulses manner. Pharmacokinetic parameters like Cmax, Tmax, AUC, T1/2 were derived from in vivo kinetic data for ACE+LEF combination treatment. Further effect of alcohol dose dumping was also studied and no significant difference observed in the release profile in presence of alcohol.