Prodrug design concept is a part of drug discovery process which was initiated for improving drug therapy, in which a unique substance is created to have desirable pharmacokinetic characters in order to optimize pharmacologically potent structures which ultimately lead to the design of better drugs. The literature has revealed a lot of successful work on prodrugs for decreasing the toxicity and also targeting the drug to various parts of the body. Literature available in the field on colon targeting indicates the difficulty in the treatment of inflammatory bowel diseases (IBDs) which is a common symptom for all the diseases of colon, viz., ulcerative colitis, crohn’s disease, irritable bowel syndrome and colon cancer due to failure of the drug to reach at the site of action i.e. colon in appropriate concentration. As most of the drugs are absorbed in the upper gastro-intestinal tract like NSAIDs which are primarily absorbed in the stomach and antibiotics / antibacterials which are also absorbed in the jejunum or distal ileum, the treatment of IBD had ever been a great problem due to non availability of these drugs in the distal intestinal region. In the present research, it was envisaged to synthesize mutual prodrugs of NSAIDs and antibacterial drugs to deliver them effectively to colon without their absorption at upper part of GIT. This concept will not only target the drugs to colon but also avoid gastric irritation and will maximize the therapeutic availability that will ultimately result in lowering of the doses.

From the fact presented in the previous chapter results and discussion, we can conclude that our hypothesis of releasing the drugs in colon via the formation of prodrugs was successful as the formation of mutual prodrugs of antibacterials with anti-inflammatory drugs certainly improves the drug delivery in the intestinal region. Release studies suggest that drugs start releasing from prodrug in the distal intestinal region and an appreciable release was observed in colon. Thus, anti-inflammatory action of NSAIDs can be capitalized and the antibacterial drug is also not absorbed due to their higher molecular weight from GIT. As a result the prodrug and released
Conclusions

Drugs remain in the GIT only. Abolition of unwanted absorption of drugs will lower the doses, thus increasing the therapeutic utilization of drugs.

Furthermore, SDS and SMS in combination with AT and IT will certainly be more effective microbiologically for the treatment of ulcerative colitis due to bacteria. Moreover, these drugs namely sulfadiazine, sulfamethoxazole, 5-ASA, aspirin, indomethacin and trimethoprim liberated from SDS, SMS, AT and IT will completely be utilized by the colon. Thus, the doses required for the treatment of the IBDs will be much lower as compare to present doses given for the same purpose. This more therapeutic utilization will reduce the cost of treatment and more importantly the adverse effects caused by the parent drugs will be abolished.

Likely the amide prodrugs of indomethacin with norfloxacin will be more beneficial as compare to mutual prodrug of aspirin with norfloxacin. This will be due to more potency of liberated indomethacin than aspirin. Furthermore, the prodrug of aspirin and norfloxacin may be absorbed by the ileum due to its lower molecular weight than the expected 500.

So, in the light of the experimentation with in vitro release studies suggests that the present work has been in compliance with the hypothesis given in the synopsis and thus, we can conclude that these prodrugs may taken for the further studies by some other researchers in future.