OBJECTIVE OF THE PRESENT WORK

Okra pods are fruits of the plant *Abelmoschus esculentus* L. moench, family *Malvaceae*. Okra gum, which is a natural polymer, has advantage over synthetic and semi-synthetic polymers, in that it is cheap and easily available, non-irritant, biodegradable, biocompatible, and eco-friendly. Okra gum has been investigated as a binding agent in tablet dosage forms, and has been shown to produce tablets with good hardness, friability and drug release profiles. The indigenous pharmaceutical manufacturers should therefore exploit this economic source of excellent pharmaceutical excipient that has been studied. Hence, the present work is undertaken to evaluate the properties and the applicability of Okra gum in the design of GRDDS using two model drugs like Ofloxacin, Glipizide.

Now a days, oral controlled release systems are designed offering a number of advantages including improvement in patient compliance, therapeutic efficacy and safety, decreased side effects and reduced dosing frequency. Majority of the drugs are having site specific absorption in the G.I. tract and parameters like pH dependent solubility, stability and ionization of the drug in different portions of the G.I. tract, influence such absorption. Gastric Retention Time is one of the important factors, which adversely affect the performance of an oral controlled drug delivery system.

For many drugs, increased or more predictable availability would result if controlled release systems could be retained in the G.I. tract for extended periods of time. Thus, control of placement of drug delivery systems in a specific region of the G.I. tract offers numerous advantages, especially for drugs exhibiting an absorption window in the G.I. tract or drugs with a stability problem or for drugs locally active in the stomach. Overall, the intimate contact of the
drug delivery system with the absorbing membrane has the potential to maximize drug absorption and may also influence the rate of drug absorption. These considerations have led to the development of oral controlled release dosage forms possessing gastric retention capabilities.

Gastric retention systems are such systems, which increase the gastric retention time of the dosage form at the stomach and upper parts of the small intestine and suitable for the drugs having site-specific absorption from the above sites. The controlled release of the drug from these systems at the preferred absorption site optimizes delivery of the drug, maximizing its therapeutic benefits and reduces side effects by permitting a large portion of the drug to be absorbed before passing through the lower G.I. tract.

These new excipients are found to be very useful for the formulation of various drug delivery systems. Hence in the present study, we tried to evaluate and investigate the applicability of Okra gum in the preparation of GRDDS with an objective to evaluate the suitability of Okra gum as pharmaceutical excipient and develop GRDDS using model drugs Ofloxacin, Glipizide and compare with polymers such as Xanthan gum.

3.1 Plan of Work

The present work was aimed to carry out for the development of gastroretentive drug delivery systems for Ofloxacin and Glipizide using Okra gum, Xanthan gum and Sodium bicarbonate. This work consists of three phases

3.1.1 Phase I

1. Selection and collection of raw materials

3.1.2 Phase II (Preformulation studies)

1. Drug-polymer interaction studies by FTIR
2. Drug-polymer interaction studies by DSC

3. Construction of calibration curve of Ofloxacin by UV-visible spectrophotometer.


3.1.3 Phase III

1. To characterize the Okra gum extracted from Okra pods for its physicochemical, microbiological and rheological properties.

2. To study the properties of Okra gum collected from different regions and at different seasons.

3. To evaluate the stability of Okra gum powder by accelerated stability studies.

4. To design and evaluate floating properties and in vitro release of Ofloxacin and Glipizide from natural gums like Okra gum and Xanthan gum.

5. To study the effect of gas generating agent on floating properties and in vitro release of Ofloxacin and Glipizide.

6. To evaluate the experimental formulations of Ofloxacin, Glipizide and correlate with the commercially available formulations.

7. To study the accelerated stability studies on the promising formulations.

8. To study the in vivo performance of the promising prepared dosage forms.

9. To find the type of correlation between in vitro and in vivo graphs and significant level of correlation for both Ofloxacin and Glipizide.