ABSTRACT

For decades an acute disease or chronic illness is being clinically treated through delivery of drugs to the patients in form of pharmaceutical dosage form like solid, liquid orals and other. To achieve and maintain the concentration of drug administered within therapeutic range it is often necessary to take dose several times and these results in fluctuating drug level in plasma and repeated dosing. This challenge can be partly overcome by using Bioresponsive polymeric drug delivery.

Polymers are produced by cross linking polymeric chain by the formation of either covalent bonding or non covalent bonding. Covalent bonding formation is by chemical cross linking or physical cross linking. Non covalent bonding deals with hydrogen bonding and ion-bridges. Bioresponsive polymers are those which change their behavior when exposed to external stimuli such as light, temperature, pH or ionic strengths. Thus entrapment of drug moiety in this gel base may control the release pattern. Gel formulation with suitable rheological properties can increase the contact time with mucosa at suitable site of absorption. The prolonged contact time has attributed to the rheological properties of the formulation which reduce or delay its clearance from the mucosa and to specify the polymeric interaction with mucus component.

Formulations were fabricated with combinations of bio responsive polymers. Timolol Maleate used in treatment of glaucoma was successfully formulated with temperature, Ion, pH and Light triggered polymers in form of insitu gelling eye drops. The developed formulation was having rheological properties like free flowing nature, gelation upon rise in pH and temperature and presence of Ca++ ions. The fabricated formulation has 9 hrs of gel persistence capacity and drug release behavior. Thus insitu gelling systems will show good patient acceptance due to ease of administration and decrease in application frequency.