OBJECTIVE

In the recent years, considerable attention has been focused on the development of new drug delivery systems. The therapeutic efficiency and safety of drugs administered by conventional methods can be improved by more precise spatial and temporal placement within the body, thereby reducing both the size and number of doses, through a sustained drug delivery.

These systems not only prolong therapeutic blood level but can also specify the release rate and duration in vivo precisely, on the basis of simple in-vitro tests. In order to maintain a constant drug level in the plasma, the release rate from the system should be equal to the elimination rate from the plasma. These systems also reduce fluctuations in the plasma drug levels by slowing down the absorption rate than the rate elimination due to slower drug release rate. It also improves therapy by reducing the ratio of the maximum and minimum plasma drug concentration ($C_{\text{max}}/C_{\text{min}}$) while maintaining drug levels within the therapeutic window. This ratio is relative to therapeutic index. With sufficient frequency and dose, $C_{\text{max}}/C_{\text{min}}$ in plasma at steady state is less than the therapeutic index and drug levels are maintained at effective concentration.

The most conventional method to achieve a constant plasma level is the use of intravenous infusion. However, this is inconvenient for most therapeutic situations so that other non-invasive route such as oral route is preferred due to ease of administration as well as the fact that GI physiology offers more flexibility in dosage form design than most other routes.

Drugs with a shorter biological half-life of 2-6 hrs. are eliminated rapidly from the plasma compartment within few hours. To achieve the desired effect frequent administration of drug dose is necessary to maintain their therapeutic concentration.

The sustained release microparticles can resolve the problem of shorter biological half-life drugs by sustaining the action of drugs, by the mechanism of slow release of drug from the formulation. There are several methodologies are available to prepare the sustained release microparticles.
So the objective of this study is to maintain the therapeutic concentration of such drugs by preparing sustained release microparticles by the application of coat or embedment of the drug with rate retarding polymer.

Studies can produce the efficient formulation with long lasting action of drug more than 12 hrs. compared to present formulation in market.

The sustained release microparticles are mainly oral dosage forms consisting of a multiplicity of small discrete units, each exhibiting some desired characteristics. In these systems, the dosage of the drug substances is divided on a plurality of subunit, typically consisting of thousands of spherical particles with diameter of 0.05-2.00mm.

Thus sustained release microparticles are pharmaceutical formulations in which the active substance is present as a number of small independent subunits. To deliver the recommended total dose, these subunits are filled into a sachet and encapsulated or compressed into a tablet.