



REVIEW ARTICLE

MUCOADHESION: A NEW POLYMERIC APPROACH

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Bioadhesion is the ability of a material to adhere to a biological tissue for an extended period of time. In the case of polymer attached to the mucin layer of a mucosal tissue, the term mucohesion is used. Mucoadhesion occurs between two surfaces, one of which is a mucous membrane and another is drug delivery system. It gives rapid absorption and increased bioavailability. Mucoadhesive drug delivery systems have been developed for various routes for both systemic and local effects. Mucoadhesive as a controlled drug delivery system have been developed to increase gastric retention time of the dosage forms. This review article aims to provide an overview of the various aspects of mucoadhesion and mucoadhesive materials.

Key words: Bioadhesion, Buccal, Gastric, Mucoadhesion, Polymers.

INTRODUCTION

The approach of mucoadhesive drug delivery system had been arisen in early 1980 (Boddupalli *et al* 2010). Adhesion can be defined as the bond produced by contact between a pressure sensitive adhesive and a surface. When the biological substrate is a mucosal layer than the phenomena is known as mucoadhesion (Muthukumaran *et al* 2011). Mucoadhesive drug delivery systems prolong the residence time of the dosage form at the site of application or absorption (Ahuja *et al* 1997). Mucoadhesion process occurs in polymeric drug delivery system which is a complex process (wetting, adsorption, chemical bonding etc); and is mainly influenced by polymeric based properties like degree of cross linking, chain length, and various functional groups in polymer structure. Mucoadhesive systems have been widely used throughout many mucosal covered organelles for the delivery of active ingredients at the site of action (Woertz *et al* 2013). Mucoadhesion keeps the delivery system adhering to the mucus membrane, which remain

in close contact with the absorption tissue, releasing the drug at the site of action leading to an increase in bioavailability (Mythri *et al* 2011). Since adhesion of an adhesive to a biological system is a type of bioadhesion in which water soluble or water insoluble polymer used with therapeutic agents; mucoadhesive drug delivery systems have been developed for oral, buccal, nasal, rectal and vaginal routes for both systemic and local effects (Alexander *et al* 2011).

Benefits of mucoadhesive drug delivery system

Mucoadhesive drug delivery system has several benefits which are as follows:

Prolongs the residence time of the dosage form at the site of absorption, hence increases the bioavailability (Asane, 2007; Krupashree *et al* 2014; Bhalodia *et al* 2010; Hagerstorm *et al* 2003).

- ◆ Excellent accessibility
- ◆ Rapid onset of action possible
- ◆ Rapid absorption because of enormous blood supply and good perfusion rates