In Vitro Evaluation of Adhesion Properties of Mucoadhesive Pellets Using Artificial Agar/Mucin Gel
Shih-Fan Jang, Jason T. McConville
College of Pharmacy, University of Texas at Austin, Texas 78712-0231

Objectives
- To evaluate the adhesion property of mucoadhesive pellets at various pH conditions.
- To determine the optimum conditions for mucoadhesive pellets in an artificial gastric environment.

Introduction
- A review of existing methods for evaluating adhesion properties of mucoadhesive formulations is provided. The authors describe a novel method using artificial gastric fluid, agarose gel, and mucin to simulate the in-vivo conditions more accurately.

Materials and Methods
- Materials: Methacrylic acid copolymer (HFEK), hydroxypropyl methylcellulose (HPMC), and methylcellulose (MC).
- Methods: Preparation of pellets:
  1. Solution method: Pellets were prepared by dissolving the drug in a polymer solution and then drying the mixture.
  2. Melt extrusion method: Pellets were prepared by extruding the drug-polymer mixture and then solidifying it.

Preparation of artificial gastric fluid:
- Artificial gastric fluid was prepared using a method described in the literature, which included buffers and enzymes to mimic the gastric environment.

Preparation of artificial mucin gel:
- Artificial mucin gel was prepared using a method described in the literature, which included mucin and a buffer to mimic the mucin environment.

Preparation of artificial agarose gel:
- Artificial agarose gel was prepared using a method described in the literature, which included agarose and a buffer to mimic the agarose environment.

Methods for evaluating adhesion properties:
- Pellets were evaluated for adhesion properties using a method described in the literature, which included contact angle analysis, force measurement, and visual observation.

Results
- The adhesion properties of the mucoadhesive pellets were evaluated at various pH conditions and were found to be significantly different.

Discussions
- The results indicate that the adhesion properties of the mucoadhesive pellets are influenced by the pH conditions and the presence of artificial gastric fluid, agarose gel, and mucin gel.

Conclusions
- These findings suggest that the developed method provides a more accurate evaluation of the adhesion properties of mucoadhesive pellets.

References