Preparation and characterization of co-processed excipient carrageenan-pregelatinized cassava starch propionate as a matrix in the gastroretentive dosage form

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The gastroretentive dosage form is designed to prolong the gastric residence time of the drug delivery system which also results in the development of an appropriate excipient. The purpose of this study is to develop and characterize co-processed excipient made from carrageenan (kappa-iota = 1:1) and pregelatinized cassava starch propionate (PCSP) in ratios of 1:1, 1:2, and 1:3. PCSP was prepared with propionic anhydride in an aqueous medium. The product was mixed with carrageenan (kappa-iota = 1:1), as well as characterized physicochemical and functional properties. The co-processed excipient was then used as a mucoadhesive granule and floating tablet. The USP Basket was selected to perform the dissolution test of the granules in HCl buffer (pH 1.2) and distilled water for 8 hours each. Mucoadhesive properties were evaluated using bioadhesive through a vitro test and wash-off test. As for the floating tablet, the USP Paddle was selected to perform the dissolution test of the tablets in 0.1 N HCl for 10 hours. The floating lag time and floating time were tested in 0.1 N HCl for 24 hours. The result of these studies indicated that co-processed excipient carrageenan-PCSP can retard dosage form in gastric and drug controlled release, thus making it a suitable material for the gastroretentive dosage form.