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Formulation and Evaluation of Floating Drug Delivery System of Diltiazem Tablet

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Abstract: *The design and assessment of monolithic gastroretentive diltiazem dosage form s are described in the current study. As rate controlling polymers, hydrophilic cellulose derivatives, sodium alginate, sodium carboxy methyl cellulose, Polyox, and Methocel K100M in conjunction with Methocel E6LV are employed. Sodium bicarbonate was added as a gas producing substance.Wet granulation was used to make the tablets, which were t hen assessed for various characteristics, including thickness, diameter, homogeneity of drug content, friability, floating lag time, in-vitro buoyancy, in-vitro drug release studies, and stability studies. The results for every evaluation parameter were noteworthy. The medication and excipients did not interact, accor ding to DSC testing. It was discovered that the content of polymers and floating agents controlled the release rate, extent, and processes. The drug release kinetic s from the tablet were based on the Higuchi and Korsmeyer equations. In accordance with ICH rules, Formula F5 and F6 were both stored for three months at 40 °C/75% RH. Based on the findings of the research, F6 was determined to be the most optimal formulation out of all of the others. Formula F6 loaded with barium sulfate had a mean stomach retention duration of 5.50 ± 0.55 hours, according t o abdominal Xray imaging in eight healthy adult volunteers. It has been determined that the floating mechanism can be used to create the gastroretentive tablet of diltiazem HCI, extending its residence period and, consequently, its availability for absorption from the upper gastrointestinal tract (GIT) or stomach.*

Keywords: Floating drug delivery systems, multiple unit, bioavailability, gastric residence time