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To Formulate and Evaluate the Metformin Hydrochloride Floating Tablet

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Abstract: *The aim of the research was to create a gastro retentive system for prolonged release of metformin HCl in the proximal part of the gastrointestinal tract (GIT) in the form of an oral floating tablet. Metformin HCl is an antidiabetic biguanide with poor bioavailability and an absorption window in the upper GIT. Floating tablets were prepared using a wet granulation method containing the natural polymers guar gum and kcarrageenan and the synthetic polymer HPMC K100 (HPMC) either alone or in combination. Sodium bicarbonate and citric acid were used as gas generators. Floating tablets were evaluated for weight variation, hardness and friability, drug content, swelling index, in vitro buoyancy and in vitro drug release. The formulation is optimized based on buoyancy, matrix integrity and in vitro drug release in simulated gastric fluid at pH 1.2. A formulation formulated with a combination of 6 wt. % k-carrageenan and 11 wt. % guar gum showed good gel strength, stable and continuous buoyancy for 12 hours, minimal buoyancy delay of 58 seconds, and good matrix integrity during dissolution period. The drug release of the optimized formulation followed the Korsmeyer- Peppas model and the mechanism was non-Fickian/divergent. PXRD and DSC studies showed partial amorphization of the drug. The mechanism of drug release appeared to be a diffusion mechanism. Stability studies have shown that the drug does not degrade when stored for 3 months at 40˚C.*

Keywords: Guar gum, K-carrageenan, HPMC K100, bioavailability, floating tablet.