

# Comparative Study on Effect of Natural and Synthetic Superdisintegrants in the Formulation of Metoclopramide HCL Mouth Dissolving Tablets

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**Abstract:** Metoclopramide HCL is 4-Amino-5-chloro-N-(2-(diethyl amino) ethyl)-2-methoxybenzamide that is mainly indicated as an Anti-emetic. In such conditions mostly the patient becomes panic and will have difficulty swallowing the tablet with a glassful of water. In such cases, Mouth dissolving tablets will be a good solution for patient compliance and an efficient dose regimen. Metoclopramide HCL tablets are available in different strengths i.e., 20 mg and 40 mg. The main objective of this project work was to develop & design mouth dissolving tablets (MDTs) containing Metoclopramide HCL 20 mg and to perform a comparative study using pharmaceutical excipients with different sources i.e. from synthetic and natural superdisintegrants to enhance patient compliance and therapeutic value as compared with the available market brands. Mouth dissolving Tablets of Metoclopramide HCL were formulated by using Natural and synthetic Superdisintegrants like Hibiscus leaves mucilage, Plantago ovata seeds mucilage and Sodium Starch Glycolate, Cross Povidone microcrystalline cellulose, sweetening agent as Sodium saccharine, talc and magnesium stearate as Drug - excipients compatibility tests performed before starting the formulation. The selection and the rejection of excipients for the experimental formulation were considered after getting the result of the drug excipients compatibility study. The flowability of the powder mixtures was evaluated using Carr's index, Angle of Repose, and Hausner's ratio. The tablets were evaluated according to the standards prescribed by British Pharmacopoeia like weight variation, thickness, hardness, friability, disintegration time, a simulated wetting test, and in-vitro dissolution. Prepared tablets after Optimization showed disintegration time of fewer than 30 seconds and drug dissolution of about 75% within 30 minutes. The prepared tablets of optimized batch tested for stability 40 degrees Celsius and 75% RH for 3 months and were found to be stable. Prepared Mouth Dissolving tablets of Metoclopramide HCL 20 mg from optimized batch were found bioequivalent under fasting and fed conditions with the available market products.

**Keywords:** synthetic superdisintegrants, metoclopramide, HCL, mouth dissolving tablet

## 1. Introduction

Among all the routes of the drug delivery system, drug delivery through the oral route is most common and preferred for both solid and liquid dosage forms. Solid dosage forms are more popular. Tablet is one of the preferred solid dosage forms because of its dose, safest, and economical (Adchitre Vaishali B et al., 2016). Tablet is a compressed solid dosage form which contain medicaments in which excipients are present. In the Indian Pharmacopoeia, Tablets are defined as solid, flat, or biconvex dishes and unit dosage form which prepared by compressing a drug or a mixture of drugs with or without diluents. They vary in shape and differ greatly in size and weight depending on the number of medical substances and the intended mode of administration. All the medicaments are available in tablet form except where it is difficult to formulate or administer.

Mouth Dissolving Tablets" (MDTs) are characterized by a strong single-unit measurement structure that we put on our tongue where it disintegrates within a couple of minutes and afterward can be swallowed by water. The quicker the medications breaks, faster the scattering and disintegration

happen. If this procedure happens fast, the drug is ingested faster.

## 2. Material and Methods

### Drug and Excipients used in the formulation

#### F1-F3 with Synthetic Superdisintegrants

Sr. No.	Ingredients	Unit Formula (mg/tablet)		
		F-1	F-2	F-3
1	METOCLOPRAMIDE HCL	10	10	10
2	MCC	30	30	30
3	SSG	5	10	15
4	Cross Povidone	15	10	5
5	Mannitol	143	143	143
6	Sod. Saccharine	2	2	2
7	Aerosil	2	2	2
8	Mag. Stearate	1	1	1
9	Talc	2	2	2
Net Wt. / Tab. in mg		210	210	210

#### F4-F6 with Natural Super disintegrants

Sr. No.	Ingredients	Unit Formula (mg/tablet)		
		F-4	F-5	F-6
1	METOCLOPRAMIDE HCL	10	10	10
2	MCC	30	30	30

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