International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

Formulation and Optimization of Fast Dissolving Tablets of Omeprazole Using Design of Experiments (DoE) Approach

Dr. Payal N. Vaja[1], Mr. Uttamkumar V. Rakholiya[2]
[1]*Assistant Professor, School of Pharmacy, Dr. Subhash University, Junagadh (362001), Gujarat, India.*
[2]*Research Scholar, School of Pharmacy, Dr. Subhash University, Junagadh (362001), Gujarat, India.*

Date of Submission: 10-06-2025 Date of Acceptance: 20-06-2025

ABSTRACT:

Objective

The main objective of this study was to formulate and evaluate fast dissolving tablets of Omeprazole using direct compression and wet granulation methods and to compare their performance based on various physicochemical parameters and compare the drug release profiles of different formulations to identify the most effective formulation for rapid disintegration and maximum drug release.

Method

Formulations were developed using direct compression method and formulation variables such as superdisintegrant and binder concentrations were optimized using Box-Behnken Design (BBD). The tablets were evaluated for pre-compression and post-compression parameters such as hardness, friability, weight variation, wetting time, disintegration time, and in-vitro drug release. Drug-excipient compatibility was confirmed through FTIR analysis.

Result

The optimized formulation showed a drug release of 99.97% within 12 minutes and rapid disintegration. In contrast, wet granulation tablets had higher hardness but slower disintegration, making them less suitable for fast release.

Conclusion

The study concludes that the direct compression method, particularly with crospovidone superdisintegrants , is the most effective technique for formulating Omeprazole fast dissolving tablets. This formulation offers rapid disintegration and enhanced drug release, making it a suitable alternative for conventional oral dosage forms.

Keywords: Omeprazole, Fast dissolving tablets, direct compression, Wet granulation Box-Behnken Design, Superdisintegrants, Crospovidone.

I. INTRODUCTION

Introduction of FDT

Fast dissolving tablets are also called as Oro dispersible tablets, fast disintegrating tablet, and mouth dissolving tablets, orally disintegrating tablets, rapid dissolving tablets and porous tablets. Out of all the terminology mentioned above, these dosage forms were approved as FDT by the US Pharmacopoeia (USP). . Recently, European pharmacopoeia has used the term Oro dispersible tablet for tablets that disperses readily and within 3 min in mouth before swallowing.[01]

Significance:

A woman travelling and suffering from a migraine attack may not have immediate access of water.

A very elderly patient may not be able to swallow a daily dose of antidepressant.

A schizophrenic patient can hide a conventional tablet under his/her tongue to avoid their daily dose of antipsychotic.

A middle-aged woman undergoing radiation therapy for breast cancer may be too nauseous to swallow her H2 blocker. So, FDTs are perfect fit of all these patients. These problems led to development of novel types of solid dosage forms that disintegrates and dissolve rapidly in saliva without the need of drinking water. The need for delivering drugs to patients efficiently and with few side effects has prompted pharmaceutical companies to engage in the development of new drug delivery systems. A solid dosage form that dissolves or disintegrates rapidly in oral cavity, resulting in solution or suspension without the need of water is known as fast dispersing dosage form or mouth dissolving tablets. Indeed, the mouth dissolving tablet is an important and attractive alternative to liquid dosage form. Mouth dissolving tablets are not only indicated for people having difficulty in swallowing but also ideal for unfavourable conditions of administration where

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

water is not available. Syrups are best for paediatrics but they are bulky and drugs are not as stable in liquid form as in solid forms like tablets. Recent market studies indicates that most of the patient population prefers FDTSs to other dosage forms and would ask their doctors for FDTSs (70%), purchase FDTSs (70%), or prefer FDTSs to regular tablets or liquids (>80%). In addition, more business needs are driving FDT technology development and the commercialization of new products such as the need for expanded product lines, improved life-cycle management, extended patent life, and marketing advantages. [02]

Challenges in Formulating FDT:

Palatability:

For formulation scientists, hiding the taste of bitter medications chosen for FDT is a difficult task. Orally disintegrating drug delivery systems often contain the medication in a taste-masked form because most medications are not appetizing. Therefore, the ability of the medications to hide their taste becomes essential for patient compliance.

Mechanical strength:

ODTs are either composed of extremely porous or soft-molded matrices or compressed into tablets with very little compression force, which makes the tablets brittle or friable and challenging to handle, in order to allow them to dissolve in the oral cavity. Few technologies, like Wowtab from Yamanouchi Shaklee and Durasolv from CIMA Labs, can create tablets that are strong enough and long enough to be put in multi-dose bottles.

Hygroscopicity / moisture sensitivity:

Many oral dissolving dose forms are hygroscopic, meaning they lose their physical stability in typical temperature and moisture environments. They must therefore be protected from moisture, which requires the use of specific product packaging. [03]

Dose/Amount of drug:

The quantity of medication that can be included in each unit dose limitations the use of ODT technologies. When developing fast dissolving dosage forms, molecules that require a few major challenges: a) masking the active ingredient's tastes, b) mouth feel or toughness, and c) tablet dimension. Due to the fact that most medications need to be taste-masked, the quantity of taste-mapping ingredients used in various dosage forms will vary depending on how bitter the drug is in relation to its dosage, which may ultimately affect the size of the final tablet.

The quantity of medicine that can be included in each unit dose limits the use of FDT technologies; for lyophilized dosage forms, the drug dose must be less than 400 mg for drugs that are insoluble and less than 60 mg for soluble drugs.

Aqueous solubility:

Water-soluble medications provide a number of formulation challenges due to the production of eutectic mixtures, which lower the freezing point and produce a glassy solid that may crumble when dried due to the loss of supporting structure during the sublimation process. Using matrix-forming excipients, like mannitol, which can cause crystallinity and provide the amorphous composite stiffness, can stop this kind of collapse.

Size of tablet:

The size impacts how easy it is to take a tablet. A tablet larger than 8 mm was considered to be the simplest to manage, while a tablet 7-8 mm was the easiest to swallow. So, a tablet size that is convenient to carry and manage. [03-04]

Advantages of FDT

- Improved patient compliance.
- Rapid onset of action and may offer an improved bioavailability.
- Patient having more difficulty in swallowing tablet can easily administer this type of dosage form.
- Useful for paediatric, geriatric and psychiatric patients.
- Suitable during travelling where water is may be not available.
- Gives accurate dosing as compared to liquids.
- Good chemical stability.
- Free of need of measuring, an essential drawbacks in liquids to ensure the tablet's fast dissolving tablet, water must rapidly egress into the tablet matrix to cause rapid disintegration and instaneous dissolution of the tablet. Maximizing the porous structure of the tablet matrix and incorporating an appropriate disintegrating agents or highly water soluble excipients in the tablet formulation are the basic approaches used in current fast dissolving technologies. [04]

Requirement of FDT

- An ideal MIMT should.

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

- Require no water for oral administration, yet dissolve/disperse/disintegrate/ in the mouth in a matter of seconds.
- Have a pleasant mouth feel.
- Have an acceptable taste masking property.
- Be harder and less friable.
- Leave minimal or no residue in mouth after administration.
- Exhibit low sensitivity to environmental conditions (temperature and humidity).[05]

TABLET DISINTIGRANT:

In order for the body to absorb the drug easily, it must first be in solution. Disintegration, as defined by the USP, is the breakdown of the tablet into smaller particles or granules, which is the first crucial step toward solution for the majority of tablets. In the absence of rapid erosion of the surface, a tablet must first disintegrate before it can dissolve. Ingredients such as starches, agar, amylose, gum and its derivatives, cellulose and its derivatives, gelatin, silicone compounds, and resins are employed as Disintegrant.

It has been shown through research that disintegration and dissolution are not always related. Nonetheless, disintegration is still utilized as a guide for the formulator in creating the ideal tablet formula and as an in-process control test to guarantee batch-to-batch uniformity because the dissolution of a drug from the broken tablet appears to regulate the appearance of the drug in the blood, either fully or partially.

A number of variables may influence the breakdown of the tablet. The water absorption rate, tablet porosity, processing factors, and the impact of lubricants, binders, surfactants, and active ingredients are some of these. Rapid absorption of water into the tablet's center is always necessary for rapid breakdown. For the aim of creating fast-dissolving tablets, it is essential that the tablets have open pore structures inside. [06]

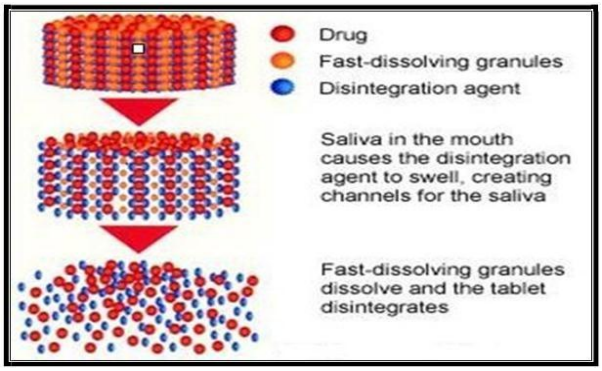

Fig. No. 1: Common steps in tablet disintegration.

.

INTRODUCTION OF PROTON PUMP INHIBITORS (PPI):

A class of drugs known as proton pump inhibitors is used to treat a wide range of conditions involving the generation of acid in the stomach. This activity examines proton pump inhibitors' uses, side effects, and indications as a useful treatment for conditions associated with acid reflux and Heartburn.

The class of medications known as proton-pump inhibitors (PPIs) is most recognized for its application in conditions involving symptoms of acid. One medication in this class, omeprazole, is one of the top ten most prescribed medications in the US. The heterocyclic chemical compound benzimidazole is the source of PPIs, which are utilized for the following purposes.

1. Esophagitis
2. Non-erosive reflux disease
3. Peptic ulcer disease
4. Prevention of nonsteroidal anti-inflammatory drug-induced ulcers
5. Zollinger-Ellison Syndrome
6. Treat Helicobacter pylori infections

The FDA has approved the following PPIs as of 2015:

1. Omeprazole
2. Esomeprazole
3. Lansoprazole
4. Dexlansoprazole
5. Pantoprazole
6. Rabeprazole

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

PPIs can be used to treat pediatric disorders as well. The FDA now approves these medications for the short-term treatment of GERD symptoms and for the treatment of pediatric esophagitis.

In the end, PPIs work by reducing stomach acid production. These medications are absorbed in the proximal small bowel and then enter the bloodstream, where they impact the stomach's parietal cells. The proton pump that PPIs block, the H+/K+ ATPase enzyme, is found in parietal cells. The last stage of acid secretion into the stomach is this enzyme. [07]

II.MATERIAL AND METHOD

Material

Omeprazole Was obtain as a Gift sample from SRINI Pharmaceuticals Pvt. Ltd.- Hyderabad. , Starch, PVPK30, Mannitol, Superdisintegrants, Mg. Stearate, Talk, All the chemical and excipient use Lab Grade.

Identification of drug sample:

It was confirmed by melting point determination and also by FTIR spectral analysis.

Drug excipient compatibility study:

Compatibility of the drug with excipients was determined by FTIR spectral analysis, this study was carried out to detect any changes on chemical constitution of the drug after combined it with the excipients. The samples were taken for FTIR study.

Determination of λ-max:

Accurately weighed 100 mg of Omeprazole separately and dissolved in 100 ml of 0.1N NAOH solution in 100 ml of separate volumetric flask and prepared suitable dilution to make it to a concentration of 10 µg/ml. Make adequate of sample with concentration range of 10µg/ml Omeprazole and calculate the spectrum of this solution was run in 200-400 nm range in U.V. spectrophotometer. [08]

Calibration curve of Omeprazole:

100 mg of Omeprazole was weighed accurately and transferred to 100 ml volumetric flask, and make up the volume was adjusted with 0.1 N NAOH Solution to give a stock solution of 1000 ppm or µg/ml.

From stock solutions of Omeprazole 10 ml was taken and diluted up to 100 ml. (100 ppm or µg/ml) from this solution 0.2, 0.4, 0.6, 0.8 1, 1.2, 1.4, 1.6, 1.8, 2, 2.2 ml solutions were transferred to 10ml volumetric flasks and make up the volume up to 10 ml with 0.1 N NAOH Solution separately to gives standard drug solution of 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 µg/ml concentration. [08]

METHOD OF PREPARATION OF FAST DISSOLVING TABLET

FDT prepare by direct compression:

Omeprazole, Mannitol, Micro crystalline cellulose, Crospovidone, croscarmellose sodium, Sodium starch glycolate, Magnesium stearate, Talc all the chemicals used were lab grade used and were passed through sieve # 40. All the above sieved ingredients were then mixed for 15 minutes.

Magnesium stearate and Talc previously passed through sieve # 60 was then mixed with above blend for 5 minutes.The basic approach used to study and evaluation of Fast disintegration tablet.

For this study different superdisintegrants like crospovidone, croscarmellose sodium and sodium starch glycolate were selected to formulate the Fast disintegrating tablets of Omeprazole by direct compression technique. [09]

Preliminary Trial of Direct Compression

Table No. 1: Preliminary trial batches Direct Compression Method

Ingredient (Mg/Tab)	P1	P2	P3	P4	P5	P6	P7
Omeprazolezole	**20**	**20**	**20**	**20**	**20**	**20**	**20**
Croscarmellose sodium	8	12	12	12	20	-	-
Crospovidone	-	-	-	-	-	20	20
PVP K30	4	8	20	20	20	20	10
Talk	4	4	4	4	4	4	4
Magnesium Stearate	4	4	4	4	4	12	8

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

Microcrystalline Cellulose(MCC)	350	342	330	-	-	-	50
Mannitol	-	-	-	330	322	314	278
Sodium bi carbonate	30	30	30	30	30	30	30

FDT prepare by wet granulation:

Accurately weighed the quantity of omeprazole, Super Disintegrant, mannitol, were taken in a Mortar, mixed well and sifted through 60-mesh screen. After in this mixture adding starch pest so prepared wet cohesive mask. The wet mass was sieved through 60 mesh screen and granules obtained were air-dried in the oven at 50 °C for 2 h. Dried granules were sifted through a 40-mesh screen. In last 1.5% Talc and 1.5% magnesium stearate was used as a lubricant in granules and after granules was compressed by using 8 mm normal concave punches. Tablets were prepared using the rotary tablet machine. [10]

Preliminary Trial of Wet Granulation

Table No. 2: Preliminary trial batches Wet granulation method

Ingredient (Mg/Tab)	W1	W2
Omeprazole	20	20
Croscarmellose sodium	20	20
Starch pest	7	7
Talk	5	-
Magnesium Stearate	5	10
Mannitol	293	283
MCC	-	**60**

DOE Using Box Behnken design

Table No. 3: DOE Run

	Factor 1	Factor 2	Factor 3
Run	A:mannitol (mg)	B:PVP K30 (mg)	C:Cros povidone (mg)
1	241.5	15	15
2	270	15	10
3	213	10	15
4	213	20	15
5	270	15	20
6	241.5	10	10
7	270	20	15
8	241.5	15	15
9	241.5	15	15
10	241.5	20	10

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

11	213	15	20
12	241.5	10	20
13	213	15	10
14	241.5	20	20
15	270	10	15

III RESULT AND DISCUSSION

Melting Point:

Table No. 4: Melting Point of Omeprazole

Sr. No	Text	Method	Specification	Observation
1.	Melting point	Capillary fusion Method	156°C	155°C 154°C 155°C

FTIR spectral analysis

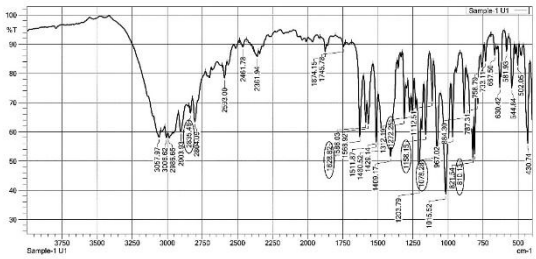

Fig. No. 2: FTIR of drug

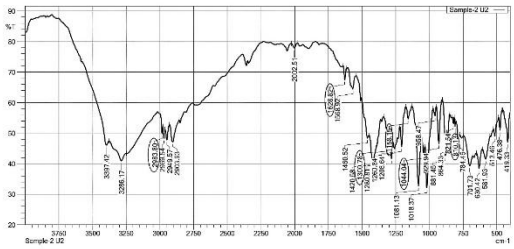

Fig. No. 3: FTIR of Drug + Excipient

λ-max of omeprazole

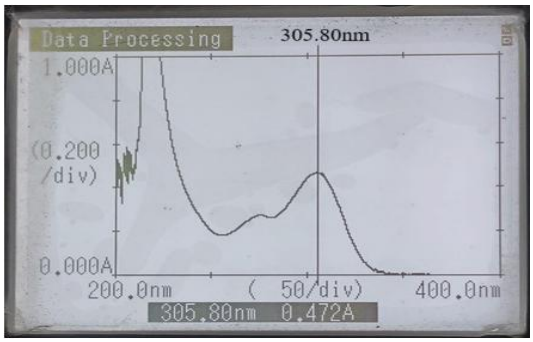

Fig. No. 4: λ-max of omeprazole

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

Calibration curve of omeprazole

Table No. 5: Calibration Curve Data of omeprazole

Concentration(µg/ml)	Absorbance (Mean ± SD)
0	0
2	0.110±0.0005
4	0.196±0.0005
6	0.292±0.0025
8	0.392±0.0015
10	0.466±0.0011
12	0.580±0.0030
14	0.667±0.0086
16	0.752±0.0017
18	0.842±0.0015
20	0.916±0.0081
22	1.098±0.0037

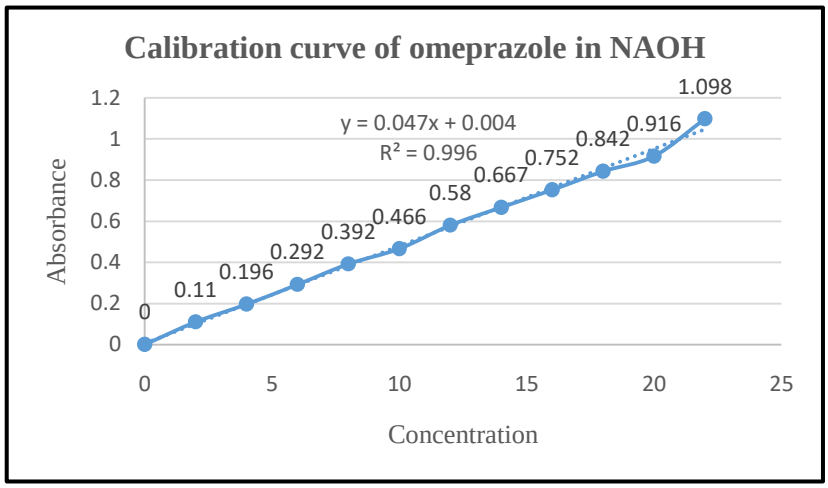

Fig. No. 5: Calibration Curve of omeprazole

DOE Run and Result

Table No. 6: DOE Run and Result

	Factor 1	Factor 2	Factor 3	Response 1	Response 2
Run	A:mannitol (mg)	B:PVP K30 (mg)	C:Cros povidone (mg)	Disintegration Time (sec)	Hardness (kg/cm^2)
1	241.5	15	15	20	1.5
2	270	15	10	17	1.2
3	213	10	15	20	1.9
4	213	20	15	19	0.8
5	270	15	20	14	0.2
6	241.5	10	10	18	1.3

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

7	270	20	15	11	0.3
8	241.5	15	15	19	0.8
9	241.5	15	15	16	1
10	241.5	20	10	15	0.4
11	213	15	20	19	0.9
12	241.5	10	20	16	1.8
13	213	15	10	18	1.1
14	241.5	20	20	14	1
15	270	10	15	16	0.9

DOE graphs of Disintegration Time

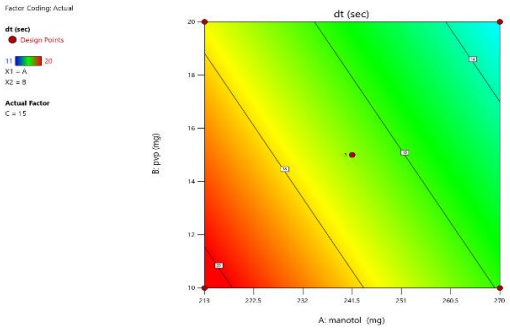

Fig. No. 6: 2D Contour Plot for Disintegration Time

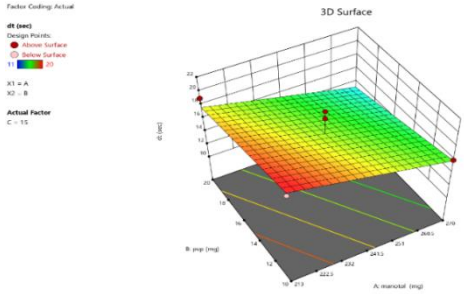

Fig. No. 7: 3D Surface Plot for Disintegration Time

DOE graphs of Hardness

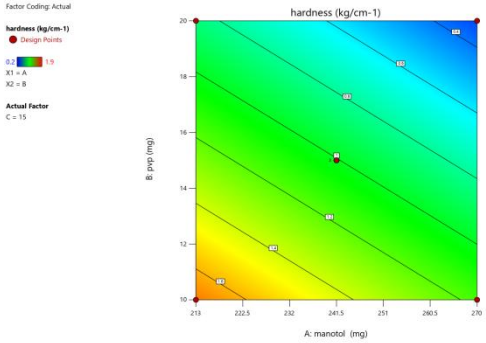

Fig. No. 8: 2D Contour Plot for Hardness

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

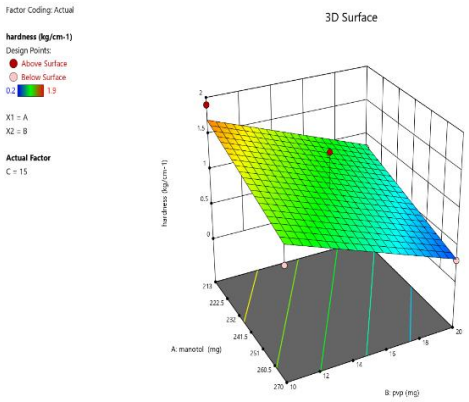

Fig. No. 9: 3D Surface Plot for Hardness

DOE Overlay graphs of Hardness

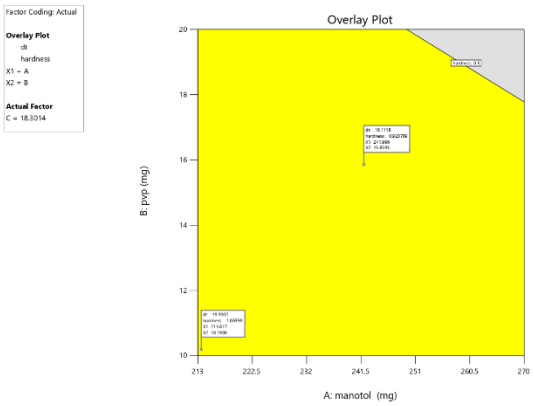

Fig. No. 10: Overlay Plot of Hardness

DOE Predicted Batch

Table No. 7: DOE Predicted Batch

Ingredient (Mg/Tab)	F1
Omeprazolezole	**20**
Crospovidone	10
PVP K30	15
Talk	2.5
Magnesium Stearate	2.5
Microcrystalline Cellulose(MCC)	80
Mannitol	240
Sodium bi carbonate	30

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

Pre-formulation Parameter

Table No. 8: Pre-formulation Data

Formulation	Bulk density (gm./cm3)	Tapped density (gm./cm3)	Angle of repose(θ)	Carr's Index (%)	Hausner'sratio
P7	0.462±0.0041	0.568±0.0021	41.10±0.32	18.8	1.23
F1	0.500±0.001	0.595±0.015	37.1±0.50	14.97	1.19
W2	0.421±0.0041	0.549±0.001	38.09±0.45	23.3	1.30

Post-formulation Parameter

Table No. 9: Post formulation Data

Sr. no	Weight variation (mg)	Friability (%)	Hardness (kg/cm2)	Thickness (mm)	Disintegration time(Sec)	Wetting time (Sec)	Uniformity of drug content (%)
P7	399.5±1.88	1.6±0.031	0.4	1.5±0.019	22±1.22	26±1.41	95±0.045
F1	397.0±1.10	1.5±0.041	0.8	1.5±0.011	17±1.50	20±1.08	93±0.031
W2	397.2±1.9	0.20±0.05	2.5	2±0.053	25min	-	-

In-vitrodissolution study:

F1 DOE Predicted Batch Direct Compression

Table No. 10: Dissolution data of F1 DOE Predicted Batch

Time	Abs	µg/ml	Mg/ml	In 900 ml	% DR
2	0.132	2.681434599	0.002681435	2.413291139	12.06
4	0.338	7.02742616	0.007027426	6.324683544	31.62
6	0.574	12.00632911	0.012006329	10.8056962	54.02
8	0.745	15.61392405	0.015613924	14.05253165	70.26
10	0.925	19.41139241	0.019411392	17.47025316	87.35
12	**1.058**	**22.21729958**	**0.0222173**	**19.99556962**	**99.97**
14	1.052	22.0907173	0.022090717	19.88164557	99.40
16	1.05	22.04852321	0.022048523	19.84367089	99.21

W2 Wet granulation

Table No. 11: Dissolution data of W2 Formulation by Wet Granulation Method.

Time	Abs	µg/ml	Mg/ml	In 900 ml	% DR
2	0.127	2.575949	0.002576	2.318354	11.59
4	0.199	4.094937	0.004095	3.685443	18.42
6	0.283	5.867089	0.005867	5.28038	26.40
8	0.335	6.964135	0.006964	6.267722	31.33
10	0.344	7.154008	0.007154	6.438608	32.19
12	0.361	7.512658	0.007513	6.761392	33.80
14	0.38	7.913502	0.007914	7.122152	35.61
16	**0.398**	**8.293249**	**0.008293**	**7.463924**	**37.31**

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

P7 Preliminary Batch Direct Compression

Table No. 12: Dissolution Data of P7 Preliminary Batch Direct Compression.

Time	Abs	µg/ml	Mg/ml	In 900 ml	% DR
2	0.349	7.259494	0.007259	6.533544	32.66
4	0.418	8.71519	0.008715	7.843671	39.21
6	0.53	11.07806	0.011078	9.970253	49.85
8	0.539	11.26793	0.011268	10.14114	50.70
10	0.567	11.85865	0.011859	10.67278	53.36
12	0.578	12.09072	0.012091	10.88165	54.40
14	0.585	12.2384	0.012238	11.01456	55.07
16	**0.596**	**12.47046**	**0.01247**	**11.22342**	**56.11**

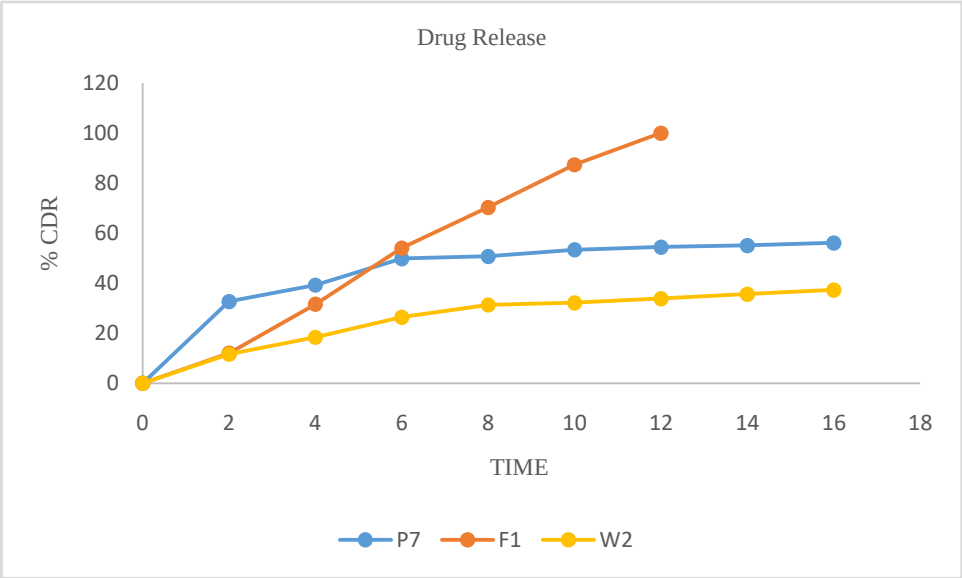

Fig. No. 11: In-Vitro Drug Release of P7, F1 and W2 Formulation

IV.CONCLUSION

Box-Behnken Design (BBD) was employed to evaluate the effect of key formulation variables, including superdisintegrants and binder concentrations. The optimized formulation demonstrated rapid disintegration and a high drug release of 99.97% within 12 minutes.In contrast, tablets prepared by wet granulation exhibited higher hardness and slower disintegration, making them less suitable for fast dissolving formulations. Therefore, direct compression with optimized superdisintegrants is the preferred method for formulating fast dissolving tablets of Omeprazole.

REFERENCES

[1]. Reddy AM, SrinivasaBabu P, Harshita B, Sravya R. Conventional and Patented Technologies in Oral Dispersible Tablets: A Review. JCPS. 6. Available from: www.jchps.com

[2]. Dave D and Brown S. "Orally disintegrating tablets- A review article." Trop. J. Phrm. Res. 2003, 3, 2-7.

[3]. Kumar P, Usman MRM, Sharma A, Diskha, Mani M, Singh P, et al. Mouth dissolving tablets: A modern approach to delivery of drug. Vol. 13, RJPT; 2020.pg 2943–50.

[4]. Hirani JJ, Rathod DA, Vadalia KR. Orally Disintegrating Tablets: A Review [Internet]. Vol. 8, T.J.P.R. 2009. Available from: http://www.tjpr.org

[5]. Manoj A and Salunke S.. "Techniques used in orally disintegrating drug delivery system." Int. J. Drug Delivery. 2010. 2. 98-107**.**

[6]. Tapankumar GR. Tripati DL and Majumdar R. "Formulation aspects in the development

International Journal of Pharmaceutical Research and Applications
Volume 10, Issue 3 May-June2025, pp: 1550-1561 www.ijprajournal.com ISSN: 2456-4494

of orodispersible tablets- An Overview." Int. J. Pharm. Pharm. Sci. 2010, 2, 23-43.

[7]. Pande OG, Bondhare NN, Pande PR. Fast Dissolving Tablet [Internet]. Available from: www.ijfmr.com

[8]. Rafiei F, Gharibeh A, Lebwohl B. Proton Pump Inhibitors [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan– [updated 2023 Jul 24; cited 2025 Apr 22]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK557385/

[9]. Rivai H, Azizah Z, Tinggi S, Padang IF, Hasanah R. Development and Validation of Omeprazole Analysis Methods in Capsules with Absorbance Methods and Areas under Curves Methods with UV-Vis Spectrophotometry. Int Journal of Pharmaceutical Sciences and Medicine (IJPSM) [Internet]. 2018; 3(3):21–32. Available from: https://www.researchgate.net/publication/323833973

[10]. Rani K.R, Reddy Y.N, Priya R.M, Anusha G, Spurthi T.Formulation and Evaluation of Oral Disintegration Tablets of Omeprazole; Indo Am. J. P. Sci, 2017; 4[05].

[11]. Article O, Jain P, Gupta RN. Formulation and Evaluation of Mouth Dissolving Tablets of Omeprazole.Int.JCPR. 2016.