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FORMULATION AND EVALUATION OF MOUTH DISSOLVING TABLET OF TELMISARTAN

Suraj Sen[1], Pratiksha Maurya*[2], Khushboo[3], Anushka[3], Ujala[3], Anuradha[3], Bhushra Bano[3], Shweta[3]

[1]Principal, Dept. of Pharmacy. Harishchandra Pharmacy College, Gaurabadshahpur (222133) U.P, India.

[2]Assistant Professor, Dept. of Pharmacy, Harishchandra Pharmacy College, Gaurabadshahpur (222133) U.P. India.

[3]Scholar, Dept. of Pharmacy, Harish Chandra Pharmacy College, Gaurabad shahpur (222133) U.P. India.

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***Corresponding Author**
Pratiksha Maurya
Assistant Professor, Dept. of Pharmacy, Harishchandra Pharmacy College, Gaurabadshahpur (222133) U.P. India.

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ABSTRACT

Telmisartan is a ACE inhibitor anti-hypertensive drug. Hence, in the present work, Telmisartan fast dissolving tablets will be prepared by using different super disintegrating agents. The amount of drug that is subject to first pass metabolism is reduced as compared to mouth dissolving tablets. Orally disintegration tablets contain wide variety of pharmaceutical active ingredients covering many therapeutic categories. The time for disintegration of orally disintegrating tablets are generally considered less than one minute. Orally disintegrating tablets are characterized by high porosity, low density and low hardness. The blend was examined for the precompressional parameters and post-compression parameters. Drug compatibility with excipients was checked by FTIR studies. The values of pre-compression parameters evaluated were within prescribed limits and indicated good free flowing property. In all the formulations, friability is less than 1%, indicated that tablets had a good mechanical resistance. Drug content was found to be in the range of 98 to 102%, which is within acceptable limits. Hardness of the tablets was found to be in the range of 3-4 Kp. The in vitro dispersion time was found to be in the range of 38-112sec with rapid in vitro

dissolution within 3 min. No chemical interaction between drug and excipients was confirmed by FTIR studies. The drug release from tablets of Telmisartan prepared by direct compression showed that 98.20% drug release within 15 minutes.

KEYWORDS: Telmisartan, Fast dissolving Tablets, Super disintegrants.

INTRODUCTION

Orally administered dosage form e.g. tablets, capsules are convenient dosage form far many drugs. But, they are challenging to the formulate if the active substances has poor dissolution or low bioavailability. Polymer coating enables the formulation of mouth dissolving and taste masking of bitter taste drugs thereby giving better patient compliance. Tablets that are fast disintegrate ordissolve rapidly in the patient's mouth, are convenient for young children, aged and patients with swallowing difficulties. For these formulations, the small volume of saliva is usually sufficient to result in tablet disintegration in the oral cavity. The medication then be absorbed partially or entirely into the systemic circulation from blood vessels in the sublingual mucosa, or it can be swallowed as a solution to be absorbed from the gastrointestinal tract(GIT). Many patients find it difficult to swallow tablets and hard gelatin capsules and thus do not comply with prescription, which results in high incidence of noncompliance and ineffective therapy. It is estimated that 70% of the population is affected by this problem, which can be overcome by using fast dissolving tablets. Significance of fast dissolving drug delivery system includes administration without water, accuracy of dosage, ease of portability and alternative to liquid dosage forms, ideal for pediatric and geriatric patients and rapid onset of action. Co-processing has been used to produce directly compressible powder mixtures with superior physicochemical properties (flowability, hygriscopicity and compactibility) compared with their mixture or the individual excipients. Telmisartan is an antihypertensive drug which is insoluble in water, slowly or incompletely dissolves in gastrointestinal tract, its rate of bioavailability is about 42%. Telmisartan is the newly introduced antagonist (angiotensin-II receptor blocker) used in management of hypertension. It blocks the aldosteron secreting effect of angiotensin-II and are used for controlling mild to moderate hypertension. Fast dissolving tablets are disintegrating and/or dissolve rapidly in the saliva without the need for water. Some tablets are designed to dissolve in saliva remarkably fast, within a few seconds, and are true fast dissolving tablets. Others contain agents to enhance the rate of tablets disintegration in the oral cavity, and are more appropriately termed fast-disintegrating tablets as they may take up to a minute to

completely disintegrate. Oral delivery is currently the gold standard in the pharmaceutical industry where it is regarded as the safest, most convenient and most economical method of drug delivery having the highest patient compliance. Fast or mouth dissolving tablets have been formulated for pediatric, geriatric, and bedridden patients and for active patients who are busy and travelling and may not have access to water. Such formulation provides an opportunity for product line extension in the many elderly persons will have difficulties in taking conventional oral dosage forms because of hand tremors and dysphasia. Swallowing problems also are common in young individuals because of their under developed muscular and nervous systems. Other groups that may experience problems using conventional oral dosage forms include the mentally ill, the developmentally disabled, and patients who are uncooperative, on reduced liquid intake plans, or are nauseated. In some cases such as motion sickness, sudden episodes of allergic attack or coughing, and an unavailability of water, swallowing conventional tablet may be difficult.

REVIEW OF LITERATURE

Literature reviews on Telmisartan Mouth Dissolving Tablets (MDTs) highlight using techniques like solid dispersion, liquisolid, and direct compression with superdisintegrants (crospovidone, sodium starch glycolate, croscarmellose sodium) to overcome poor water solubility and enhance bioavailability, focusing on rapid disintegration (<1 min) and quick drug release (within minutes) for improved patient compliance, especially for hypertension. Key evaluation parameters include pre-compression (flow, density), post-compression (hardness, friability, weight variation, disintegration, dissolution), drug-excipient compatibility (FTIR), and in-vitro/in-vivo studies, with optimized formulations showing high drug release and short dispersion times.

1. Dhiman et al; 2026

Telmisartan is a Anti-hypertensive drugs which is insoluble in water, hence the drug may be slowly or incompletely dissolves in the gastro-intestinal tract. So the rate of dissolution and therefore its bioavailability is less (bioavailability 42%). In the present study an attempt has been made to prepare Fast Dissolving tablets of Telmisartan by using Superdisintegrants-Cross carmellose sodium, Microcrystalline cellulose and sodium starch glycolate, level of addition to increase the rate of drug release from dosage form to increase the dissolution rate and hence its bioavailability. The tablets were prepared by Direct Compression methods and the prepared blend and tablets were evaluated for their physicochemical properties and In-

Vitro dissolution study. The evaluation studies were performed such as Weight Variation, Thickness, Hardness, Disintegrating Time, Wetting Time, and In-Vitro Drug Release. The Disintegration time of Fast Dissolving tablets were increased by the addition of concentration of Superdisintegrants.

2. Kashmira B Umalkar et al ; 2012

Hypertension is a major cause of concern not just in the elderly but also in the youngsters. An effort was made to formulate a fast dissolving film containing telmisartan which is used in the treatment of hypertension with a view to improve the onset of action, therapeutic efficacy, patient compliance and convenience. The major challenge in formulation of oral films of telmisatran is that it shows very less solubility in the pH range of 3–9. Various film forming agents and polyhydric alcohols were evaluated for optimizing composition of fast dissolving films. Fast dissolving films using hydroxypropyl methylcellulose, polyvinyl alcohol, glycerol, sorbitol, menthol and an alkalizer were formulated using solvent casting method. Optimized formulations were evaluated for their weight, thickness, folding endurance, appearance, tensile strength, disintegration time and dissolution profile.

3. D. Rajeswari et al;2024

The concept of Fast dissolving drug delivery system offers a solution for those patients having difficulty in swallowing tablets/capsules etc. This work investigated the possibility of developing Telmisartan rapid dissolving films allowing fast, reproducible drug dissolution in the oral cavity, decreases the hyperlipidemia effect in patients in less time and enhances the patient compliance The fast-dissolving oral films of Pravastatin Sodium prepared using different film-forming materials HPMC E5 and Xylitol by the solvent-casting method which is simple and cost effective. The prepared films were subjected to different evaluation parameters like morphological properties, film thickness, folding Endurance, Surface pH, content uniformity, invitro disintegration time and in vitro dissolution studies.

AIM

The aim of the present study is to **formulate and evaluate mouth dissolving tablets of Telmisartan** using suitable superdisintegrants to enhance patient compliance and improve the onset of action.

OBJECTIVES

1. **To formulate mouth dissolving tablets of Telmisartan** using different super disinter grants and suitable excipients by an appropriate method (such as direct compression).
2. **To optimize the concentration of superdisintegrants** to achieve rapid disintegration and dissolution.
3. **To evaluate pre-compression parameters** of the prepared blends, including:
   - Angle of repose
   - Bulk density
   - Tapped density
   - Carr's index
   - Hausner's ratio
4. **To evaluate post-compression parameters** of the formulated tablets, including:
   - Weight variation
   - Hardness
   - Friability
   - Thickness
   - Drug content uniformity
5. **To assess mouth dissolving tablet performance**, including:
   - In-vitro disintegration time
   - Wetting time
   - Water absorption ratio
6. **To study in-vitro drug release profile** of the formulated mouth dissolving tablets and compare it with conventional tablets.
7. **To identify the optimized formulation** based on disintegration time, dissolution behavior, and overall tablet characteristics.

MATERIALS AND METHODS

Telmisartan procured by Lupin drug pvt ltd, pune, Croscarmellose sodium, Crospovidone, Sodium starch glycolate, Microcrystalline cellulose gift sample by Maple biotech ltd, Pune.

PRE-FORMULATION STUDIES

Pre-formulation testing is an investigation of physical and chemical properties of a drug substance alone and when combined with excipients. It is the first development in the rationale development of the dosage forms. Pre-formulation studies yields necessary

knowledge to develop suitable formulation for toxicological use. It gives information needed to define the nature of the drug substance and provide a dosage form. Hence, the following pre-formulation studies were performed for the obtained sample of drug.

Bulk density

Bulk density of a compound various substantially with the method of crystallization, milling or formulation. Bulk density is determined by pouring pre-sieved granules into a graduated cylinder via a large funnel and measure the volume and weight.

Bulk density = weight of granules Bulk volume of granules

Bulk density was expressed in g/cc.

Tapped density

Tapped density is determined by placing a graduated cylinder containing a known mass of granules and mechanical tapper apparatus, which is operated for a fixed number of taps until the powder bed volume has reached a minimum volume. using the weight of the drug in the cylinder and this minimum volume, the taped density may be computed.

Tapped density = weight of granules Tapped volume of granules

Carr's Index (CI)

Carr's index is measured using the values of bulk density and tapped density. The following equation is used to find the Carr's index.

CI = (TD-BD) x100 TD

Where,

TD = Tapped density BD = Bulk density

Table 1: Flow properties and corresponding Carr's Index values.

Excellent	<10
Good	11 – 15
Fair	16 – 20
Possible	21 – 25
Poor	26 – 31
Very poor	32 – 37
Very very poor	>38

Hausner's Ratio

It indicates the flow properties of the powder and ratio of Tapped density to the Bulk density of the powder or granules.

Hausner's Ratio = Tapped density/Bulk density

Table 2: Flow Properties and Corresponding Hausner's ratio.

Excellent	1.00 – 1.11
Good	1.1 – 1.18
Fair	1.19 – 1.25
Possible	1.26 -1.34
Very poor	1.35 -1.45
Very very poor	>1.60

Angle of repose

The manner in which stresses are transmitted through a bead and the beads response to applied stress are reflected in the various angles of friction and response. The method used to find the angle of repose is to pour the powder ion a conical heat on a level, flat surface and measure the included angle with the horizontal.

$\tan\theta = h/r$ Where, h= height of the heap r= Radius of the heap

Table 3: Flow Properties and Corresponding Angle of Repose.

ANGLE OF REPOSE	POWDER FLOW
< 25	Excellent
25 – 30	Good
30 – 40	Passable
> 40	Very poor

Moisture content

The moisture content of the excipients was determined gravimetrically. Approximately 5g of sample was uniformly placed onto the sample pan, and then the heating cycle to be started.

The percentage of moisture content was calculated from the weight loss of the sample by heating.

Sieve analysis

The main aim of sieve analysis is to determine the size of the Telmisartan particles present. A series of standard sieves were stacked one above the other so that sieves with larger pore size (less sieve number) occupy the top position followed by sieves of decreasing pore size (larger sieve number towards the bottom) It is carried out by sieve analysis machine.

Procedure

A series of sieves were arranged in the order of their decreasing pore diameter (increasing sieve number) i.e. sieve number 60, 100, 120, 140, 200, collector. 30 grams of drug was weighed accurately and transferred to sieve 60 which were kept on top. The sieves were

shaken for about 5-10 minutes. Then the drug retained on each sieve was taken, weighed separately and amount retained was expressed in terms of cumulative percentage retained. Methods of preparation of telmisartan fast dissolving tablets

A) Dry granulation Method

1. Sifting

Sift Telmisartan, Micro crystalline cellulose, cross povidone, sodium saccharin and talc through mesh #40 separately.

2. Pre-Lubrication

Loaded the sifted materials of step no.1 into suitable into polythene bag and blend for 10 minutes.

3. Sifting

Sift Magnesium stearate through mesh #40 separately.

4. Lubrication

Loaded the sifted Magnesium Stearate of step no. 2 and 3 into polythene bag and mixed for 5 minutes.

5. Compression

The lubricated blend of step no.4 was compressed using following parameters: Table-4 Compression parameters.

Table-4 Compression parameters.

Tooling	8 mm round shaped standard concave punches
Weight of individual tablet	200 mg ± 5%
Thickness	4.0±0.3 mm
Hardness	6- 8 kp
Friability	Not more than 1%
DT	Not more than 15 min

Table 5: Composition of Formulation for Telmisartan Fast Dissolving Tablet.

S. No	Ingredients(mg/ml)	T1	T2	T3	T4	T5	T6	T7	T8	T9
1.	Telmisartan	20	20	20	20	20	20	20	20	20
2.	Microcrystalline cellulose USP- NF(Avicel PH 102)	149	144	139	149	144	139	149	144	139
3.	Crosspovidone	5	10	15	-	-	-	-	-	-
4.	Croscarmellose sodium USP- NF	-	-	-	5	10	15	-	-	-
5.	Sodium starch glycoate	-	-	-	-	-	-	5	10	15
6.	Arginine	5	5	5	5	5	5	5	5	5
7.	Sodium lauryl sulphate	3	3	3	3	3	3	3	3	3
8.	Menthol	2	2	2	2	2	2	2	2	2
9.	Sodium Saccharin	10	10	10	10	10	10	10	10	10
10.	Talc	2	2	2	2	2	2	2	2	2
11.	Magnesium Stearate USP-NF	4	4	4	4	4	4	4	4	4
	Tablet weight	200	200	200	200	200	200	200	200	200

Evaluation of Tablets

To design tablets and later monitor tablet production quality, quantitative evaluation and assessment of tablet chemical, physical and bioavailability properties must be made. The important parameters in the evaluation of tablets can be divided into physical and chemical parameters.

Physical appearance

The general appearance of tablets, its visual identity and overall elegance is essential for consumer acceptance. The control of general appearance of tablet involves measurement of number of attributes such as tablet size, shape, colour, presence or absence of odour, taste, surface texture and consistency of any identification marks.

Hardness test

This is the force required to break a tablet in a diametric compression. Hardness of the tablet is determined by Stock's Monsanto hardness tester which consists of a barrel with a compressible spring. The pointer moves along the gauze in the barrel fracture. The tablet hardness of 7Kp is considered as suitable for handing the tablet.

Tablet size and Thickness

Control of physical dimensions of the tablets such as size and thickness is essential for consumer acceptance and tablet-tablet uniformity. The diameter size and punch size of tablets depends on the die and punches selected for making the tablets. The thickness of tablet is measured by Vernier Callipers scale. The thickness of the tablet related to the tablet hardness and can be used an initial control parameter. Tablet thickness should be controlled within a ±5%. In addition, thickness must becontrolled to facilitate packaging.

Friability

This test is performed to evaluate the ability of tablets to withstand abrasion in packing, handling and transporting. Initial weight of 20 tablets is taken and these are placed in the Roche friabilator, rotating at 25rpm for 4min. The difference in the weight is noted and expressed as percentage. It should be preferably between 0.5 to 1.0%.

%Friability = (W1-W2)/W1 X 100 Where,

W1= weight of tablets before test

W2 = weight of tablets after test

Weight variation of Tablets: It is desirable that all the tablets of a particular batch should be uniform in weight. If any weight variation is there, that should fall within the prescribed limits:

Table 6: Acceptance criteria for tablet weight variation.

Average weight of tablet (mg)	Maximum % difference allowed
130 or Less than	± 10
130-324	± 7.5
More than 324	± 5

Average weight of tablet(mg) Maximum % difference allowed 130 or Less than ± 10

130-324 ± 7.5

More than 324 ± 5

Twenty tablets were taken randomly and weighed accurately. The average weight was calculated by, Average weight = weight of 20 tablets.

Disintegration test

Disintegration time is considered to be one of the important criteria in selection the best formulation. To achieve correlation between disintegration time in-vitro and in-vivo, several methods were proposed, developed and followed at their convenience. One tablet was placed into each tube and the assembly was suspended into the 1000ml beaker containing water maintained at 37±20oc and operated the apparatus for 15 minutes. The assembly was removed from the liquid and the tablets were observed. If one or two tablets fail to disintegrate completely, repeat the test on 12 additional tablets. The requirement is met if not less than 16 of the total of 18 tablets tested are disintegrated.

Wetting time

A piece of tissue paper folded twice was kept in a petridish containing 6 ml of purified water. The tablet was placed on the tissue paper and allowed to wet completely. The time required for complete wetting of the tablet was then recorded.

In-dispersion time

The in vitro dispersion time was measured by dropping tablet in a beaker containing 100ml of water and stirring gently. The time for the tablet to completely disperse into fine particles was noted.

Assay

Preparation of sample solution

Accurately weigh and transfer tablets powder equivalent to about 1000mg of Telmisartan into a 500ml flask. Add about 300ml of diluents and sonicate for not less than 30min with occasional shaking (maintain the sonicator bath temperature between 20 to 25°C). Dilute to volume with diluents and mix. Filter a portion of the solution through 0.45um membrane filter and discard first few ml of the filtrate.

Procedure

Record the UV absorbance of the standard and sample solutions at 223 nm by using UV spectrophotometer.

Dissolution test

Dissolution parameters

Medium: 6.8 pH phosphate buffer Volume: 900ml

Apparatus: USP type II (Paddle type) Speed: 50 rpm

Temperature: 37 ± 0.5°CSampling intervals: 3, 7, 10, 15, 20, 30 and 45 min (for profile) Preparation of 0.1N HCl

Dissolve 6.8 gm of potassium dihydrogen orthophosphate in 1000 ml water. Adjust the pH to 6.8 by using 1M NaOH solution.

Procedure

Set the parameters of dissolution apparatus as mentioned above. Place one tablet into dissolution apparatus. Lower the shafts and run the dissolution apparatus. At the end of the specified time points withdraw 10ml of sample solution from each dissolution vessel and replace the aliquots withdrawn with equal volumes of dissolution medium maintained at 37± 0.5°C. Filter the solution through 0.45 um membrane filter and discard first few ml of the filtrate. Measure the absorbance of solutions on a double beam UV spectrophotometer at about 223 nm, using the dissolution medium as blank.

RESULTS

Pre-compression parameters

Powder ready for compression containing drug and various excipients were subjected for precompression parameters (Micromeritic properties) to study the flow properties of granules, to achieve uniformity of tablet weight.

Angle of repose

The data obtained from angle of repose for all the formulations were found to be in the range of 29.900 and 34.40`. All the formulations prepared by both the methods showed the angle of repose less than 35, which reveals good flow property.

Bulk density

Loose bulk density (LBD) and tapped bulk density (TBD) for the blend was performed. The loose bulk density and tapped bulk density for the entire formulation blend varied from 0.33 gm/cm3 to 0.39 gm/cm3 (direct compression method) and 0.33gm/cm3 to 0.38gm/cm3 (sublimation method) respectively.

Hausner ratio

Hausner ratio of entire formulation showed between 1.19 to 1.34 indicates better flow properties

Carr's consolidation index

The results of Carr's consolidation index or compressibility index (%) for the entire formulation blend ranged from 17.6% to 19.6%. The directly compressible granulations had shown excellent compressibility index values up to 15% result in good to excellent flow properties.

Table 7: Pre compression parameters of the formulations prepared by Direct compression.

Formulation	Angle of repose	Bulk density	Tapped density	Compressibility index	Hausners ratio
T1	31.2±0.04	0.37±0.04	0.43±0.02	18.7±0.02	1.2±0.02
T2	32.3±0.04	0.33±0.08	0.41±0.05	16.3 ±0.02	1.12±0.08
T3	32.0±0.04	0.32±0.04	0.42±0.08	17.7±0.08	1.21±0.02
T4	32.6±0.02	0.36±0.12	0.47±0.07	18.6±0.02	1.19±0.12
T5	31.9±0.08	0.37±0.02	0.49±0.02	17.6±0.12	1.32±0.02
T6	32.8±0.12	0.38±0.04	0.46±0.04	17.6±0.02	1.24±0.08
T7	34.5±0.12	0.32±0.12	0.41±0.09	16.8±0.08	1.34±0.02
T8	31.2±0.12	0.31±0.02	0.42±0.06	17.7±0.02	1.24±0.12
T9	29.9±0.08	0.37±0.02	0.48±0.02	18.23±0.02	1.09±0.02

Table-8 Particle size distribution.

Sieve No.	Cumulative retentions
20	18.21%
30	39.21%
40	54.33%
60	66.64%
80	71.13%
100	72.91%
Receiver	100%

CONCLUSION

Based on compressibility index and particle size distribution data, it was concluded that the blend showed good flow characteristics. Thus, the blend was compressed further to check the compression parameter.

Results of post-compressional tablets prepared by direct compression: **Post-compression Parameters.**

Hardness

The hardness of all the tablets prepared by both methods was maintained within the 3.00 kp to 5.00 kp. The mean hardness test results are tabulated in table no. 24 and 25.

Friability test

The friability was found in all designed formulations in the range 0.01 to 0.05% to be well within the approved range (<1%).The friability study results were tabulated in table.

Weight variation test

The weight variation was found in all designed formulations in the range 200 to 205 mg. The mean weight variation test results. All the tablets passed weight variation test as the average percentage weight variation was within 7.5% i.e. in the pharmacopoeia limits.

Thickness

The mean thickness was (n=3) almost uniform in all the formulations and values ranged from 4.20±0.064 mm to 4.85 ± 0.016 mm. The standard deviation values indicated that all the formulations were within the range.

Wetting time

A piece of tissue paper folded twice was kept in a petridish containing 6 ml of purified water. The tablet was placed on the tissue paper and allowed to wet completely. The time required for complete wetting of the tablet was then recorded. the wetting time was found in the range of 20-41.

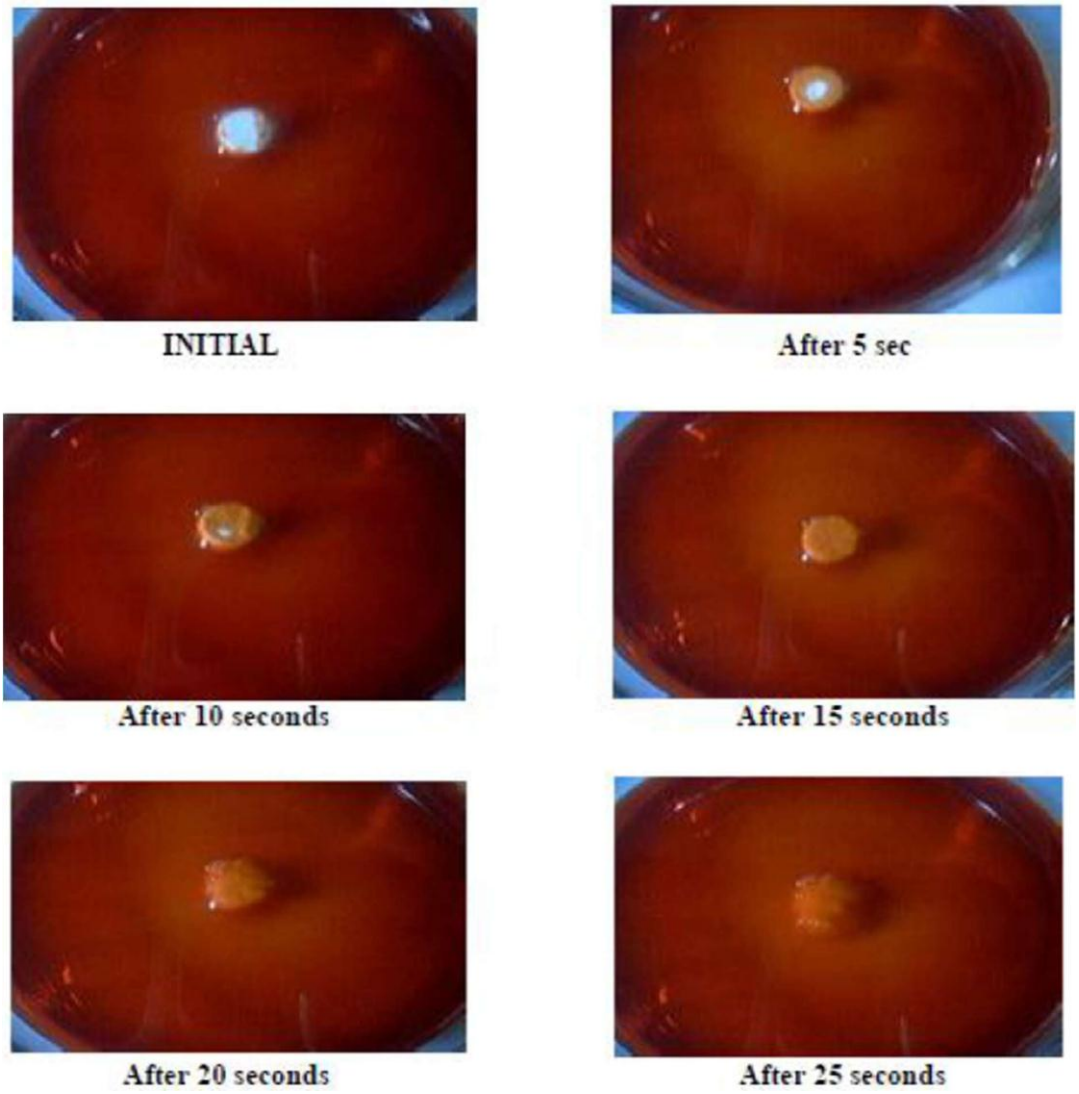

Figure-1 wetting time.

In vitro dispersion time

The in vitro dispersion time is measured by the time taken to undergo uniform dispersion. Rapid dispersion within several minutes was observed in all the formulations. The in-vitro dispersion data is tabulated in the table no.24 and 25. The in vitro dispersion time of Telmisartan prepared by direct compression and sublimation method were found to be in the range of 38 to 117 sec fulfilling the official requirements.

In vitro disintegration time

Disintegrating study showed that the disintegrating times of the tablets decreased with increase in the concentration of cross-carmellose sodium, crospovidone. However, disintegration times increased with increase in the concentration sodium starch glycolate in the tablets. It indicates that increase in the concentration sodium starch glycolate had a negative effect on the disintegration of the tablets. The results are in consistent with other results. The disintegration times of crospovidone containing tablets are comparatively lower than tablets containing cross-carmellose sodium and sodium starch glycolate due to its rapid capillary activity and pronounced hydration with little tendency to gel formation with crospovidone. Thus, these results suggest that the disintegration times can be decreased by using wicking type disintegrants (crospovidone).

Drug Content

The drug content uniformity was performed for all the formulations and results are tabulated in table Three trials from each batch were analysed spectrophotometrically. The average value and standard deviations of all the formulations were calculated. The percentage drugs content of the tablets were found to be between 98.5to 101.5 of Telmisartan. The results were within the range and that indicated uniformity of mixing.

Table: 9 Post-Compression Parameters of Tablets Prepared By Direct Compression methods.

Formulation code	Average Hardness (Kp)	Thickness (mm)	Percentage of weight loss (%)	Average Weight (mg)	In-vitro dispersion time(sec)	Disinte -gration time(sec)	Wetting time(sec)	Assay (%)
T1	3.3±0.09	4.2-4.4	0.02±1.27	201.1	48	45	20	99.7
T2	3.2 ± 0.25	4.2-4.4	0.05±0.01	201.3	49	40	23	99.3
T3	3.1 ± 0.32	4.1-4.4	0.04±0.11	203.1	38	34	21	99.5
T4	3.4 ± 0.12	4.3-4.4	0.02±0.02	201.3	79	74	35	98.6
T5	3.2± 0.08	4.3-4.4	0.01±0.05	201.1	74	69	36	98.5
T6	3.4 ± 0.23	4.3-4.4	0.01±0.06	203.3	37	39	25	98.9
T7	3.8 ± 0.25	4.3-4.4	0.03±0.05	203.1	96	90	42	98.6
T8	3.2 ± 0.22	4.3-4.4	0.04±0.012	203.3	99	96	42	100.5
T9	4.1 ±0.13	4.3-4.4	0.01±0.06	204.1	117	112	41	101.5

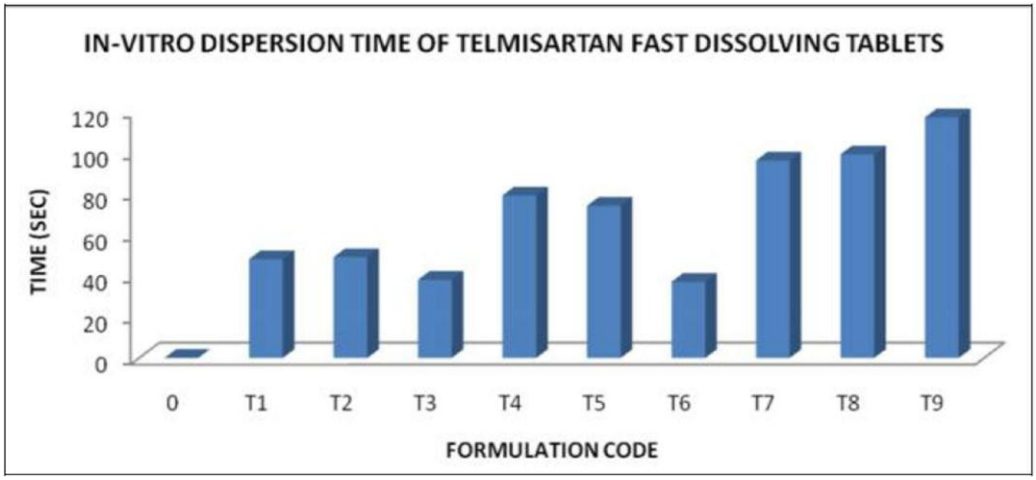

Figure-2 In-vitro Dispersion time of Telmisartan fast dissolving tablets.

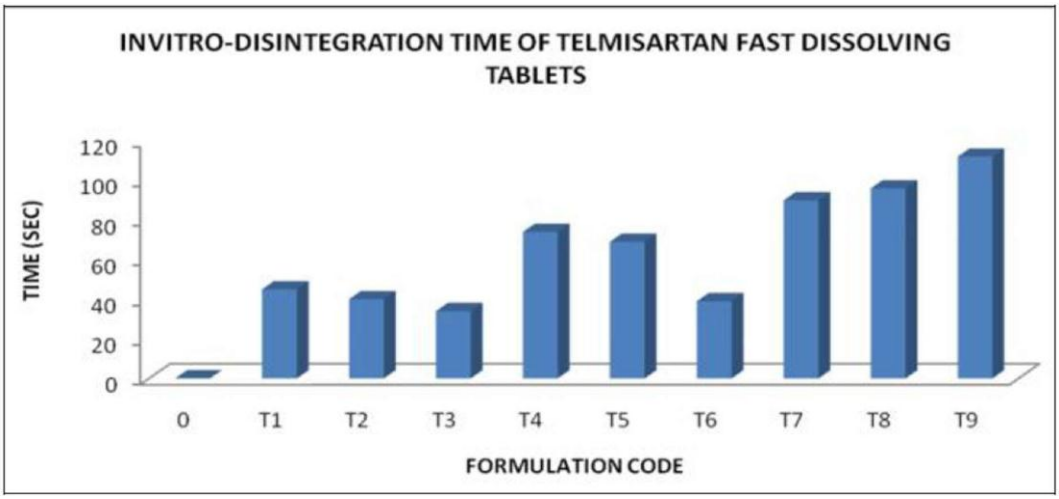

Figure-3 In-vitro Disintegration time of Telmisartan fast dissolving tablets.

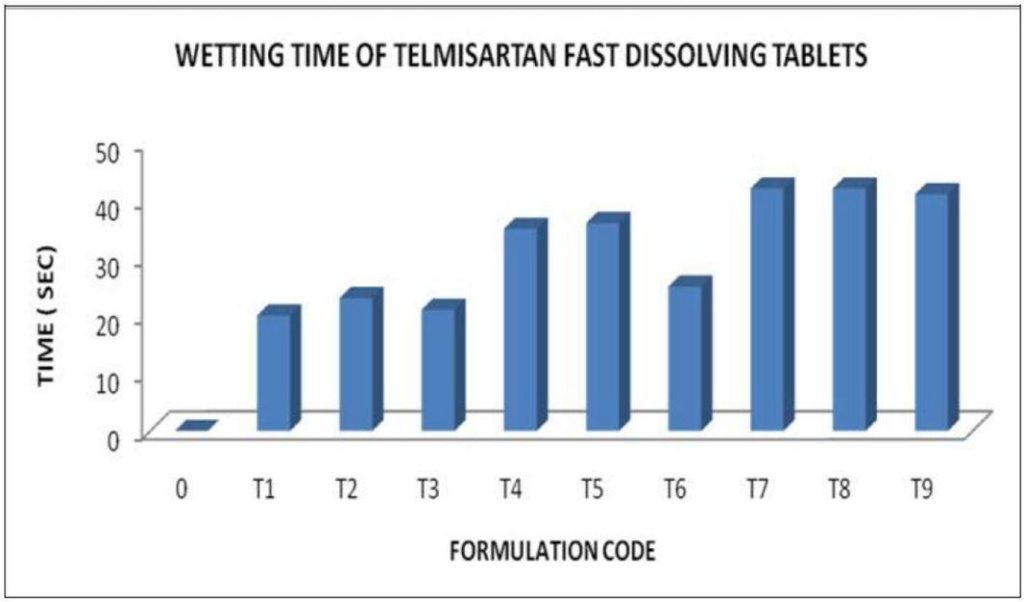

Figure-4 Wetting time of Telmisartan fast dissolving tablet.

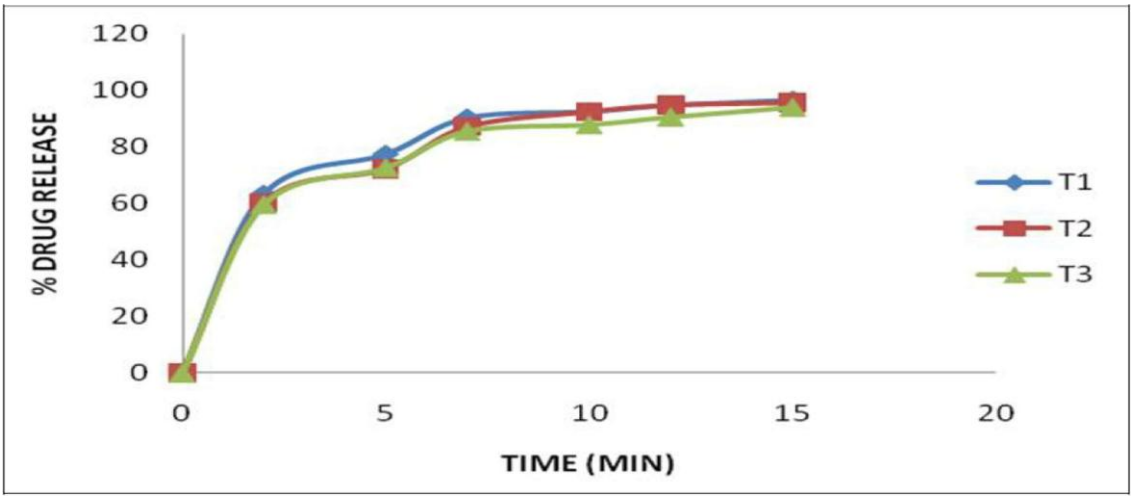

Figure-5 In vitro dissolution studies of the formulations prepared by direct compression method using Crosspovidone.

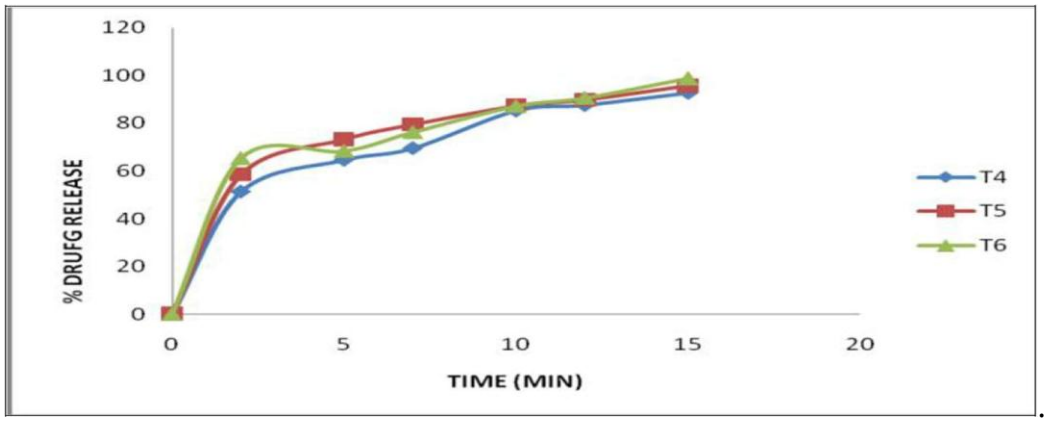

Figure-6 In vitro dissolution studies of the formulations prepared by direct compression method using Crosscarmellose sodium.

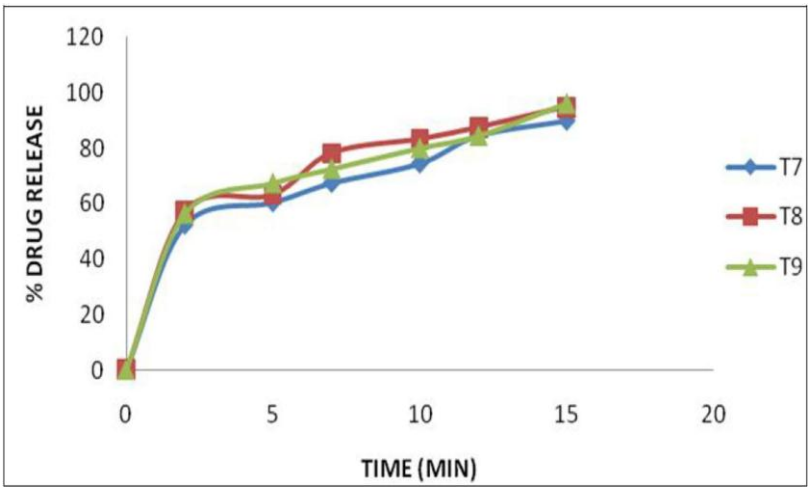

Figure-7 In vitro dissolution studies of the formulations prepared by direct compression method using Sodium starch glycolate.

OUTCOME

In the present work, Fast dissolving tablets of Telmisartan were prepared by direct compression using super disintegrants such as sodium starch glycolate, croscarmellose sodium and crospovidone. All the tablets of Telmisartan were subjected to weight variation, hardness, friability, in vitro dispersion, drug polymer interaction, drug content uniformity, and in vitro drug release. Based on the above studies following conclusions can be drawn:

1. Tablet prepared by direct compression and sublimation methods were found to be good and were free from chipping and capping.
2. The low values of the standard deviation of average weight of the prepared tablets indicate weight uniformity within the batches prepared.
3. The hardness of the prepared tablets was found to be in the range of 3 to 5 Kp.
4. The friability values of the prepared tablet were found to be less than 1%.
5. IR spectroscopic studies indicated that the drug is compatible with all the excipients.
6. The in vitro dispersion time of Telmisartan prepared by direct compression and sublimation method were found to be in the range of 34 to 112 sec.
7. The drug content of tablets was uniform in all the batches and was between 98.5 to 101.5%.
8. The drug release from tablets of Telmisartan prepared by direct compression showed that 98.20% drug release within 15 minutes

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