A Review on: Oral Dispersible Tablet

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Abstract- *In the 1980s, ODTs Technology's product hit the market. To increase bioavailability and patient compliance, oral medication delivery devices are widely employed. Over the last three decades, oral dispersible tablets (ODTs) have gained popularity as a better alternative to traditional tablets and capsules due to improved patient compliance, solubility, and stability. The purpose of this article is to look at how ODT technology could be used in medication delivery applications. ODTs may be the better option, especially for drugs that are GI sensitive, as well as for patients who are paediatrics, geriatrics, immobile patients, surgical patients, and those who have difficulty swallowing (dysphagic) regular tablets and capsules. ODTs are solid dosage forms which disintegrate fast, usually within minutes. (2).*

Keywords- Fast dissolving tablets, Mouth dissolving tablets, Orally disintegrating tablets, Orodispersible tablets, Quick-dissolving tablets, rapimelts.

I. INTRODUCTION

"A solid dosage form containing a medicinal component or active ingredient that disintegrates apace within seconds once placed upon the tongue," as per the FDA's Center for Drug Evaluation and Research (CDER), according to the "Orange Book."

Delivery of the drug to the targated site is the most significant thought presently for achieving the quickest therapeutic effect.

Fig. 1

In the market, several dosage forms are present with their high effectiveness in delivering the drugs.

Among all the routes of drug administration, the oral route is the highest acceptable route, and it is chosen as a priority by medical practitioners for administering the drug.

Oral administration is a popular, simple, and practical method of drug delivery that is preferred by working people's

An orodispersible tablet is a dose form that dissolves in seconds after being placed directly on the tongue.

Fast dissolving tablet, mouth dissolving tablet, orally disintegrating tablet, orodispersible tablet, quick-dissolving tablet, rapimelt, etc are the another synonyms of orodispersible tablet.

They are helpful for paediatrics, geriatric, unconscious and uncooperative patients (13).

B. Nagajyothi et. Al. January 2014,

Glipizide fast dissolving tablets were developed employing fenugreek gum as a natural super disintegrating agent with anti-diabetic properties for rapid treatment of high blood glucose levels, as per the Asian Journal of Pharmaceutical and Clinical Research 7:144-148. The drug's effect was studied using a glucose-induced model of experimental rats. Glipizide and Fenugreek seeds gum formulations on anti-diabetic activity was performed. The findings suggested that fenugreek gum has promise anti-diabetic effect when used with Glipizide.

Lovleen Kaur et. Al. August 2020,

Formulation and Optimization of Aceclofenac Fast Dissolving Tablets was produced by International Scholarly Research Notices. Lepidium sativum mucilage was used as a natural super disintegrant at different quantities. The post-compression properties of the tablets (weight variation, hardness, friability, wetting time, disintegration time, water absorption ratio, and in vitro drug release studies) were evaluated for all of the active blends (angle of repose, Carr's index, Hausner's ratio, and so on). SEM and stability tests

were performed on the ideal batch. The Design-Expert algorithm chose Formulation D5, which has Disintegration time of (15.5 seconds), Wetting time of (18.94 seconds), and 100 percent in vitro drug release in 15 minutes.

Kiran DagaduBaviskar et. Al. May 2017,

American Journal of Pharmtech Research has formulated and evaluated Mouth Dissolving Tablet of Lornoxicam by use of Novel Natural Super disintegrant. The formulation containing synthetic or other natural superdisintegrants like Plantago ovata husk performed better with the tablet containing 6% gum karaya. The designed pill dissolves in the mouth in a few seconds, providing rapid medication release. Rapid absorption, enhanced bioavailability, effective therapy, acceptable taste, and patient compliance were all demonstrated in this study. The batch (F2) accelerated stability study found non significant changes in physical properties.

Manju Nagpal et. Al. January 2014,

Research Journal of Pharmaceutical, Biological and Chemical Sciences 5(1) has developed fast dissolving tablets of Domperidone using supernatural disintegrant Lepidium Sativum mucilage. For formulation batches, DT ranged from 15±2 to 42±4 sec and WT from 19±2 to 44±3 seconds (F1-F9). Batch F6 was found to be a ideal batch, with DT values of 15 seconds and 94 percent in vitro drug release in 15 minutes. Domperidone quick dissolving tablets were developed using an optimum combination of Lepidium Sativum mucilage and -cyclodextrin.

Harshal Pawar et. Al. Integrative Medicine Research Volume 3, Issue 2, June 2014

A natural polysaccharide produced from Cassia Tora seeds was used to make and test Valsartan oral dispersible tablets. The drug-excipient interactions were observed using Fourier transform infrared examination. The formulation four comprising nearly 7.5 percent polysaccharide displayed well wetting and disintegration time when compared to a formulation prepared by use of a synthetic super disintegrant at the same concentration level. The ideal formulation was found to be Batch F4..

Chetan V Pawar et. Al. March 2018

The Asian Journal of Pharmaceutical and Clinical Research has developed Meloxicam mouth dissolving tablet with tablets of tablet powder produced in-house. This natural superdisintegrant gives less DT (70s) than pills prepared with branded banana powder (80s). Banana powder had a higher DT in the house than branded banana powder.

Vishal N Patel, M M Gupta et. Al 2013

For paediatric, geriatric, and bed rest patients, oral dispersible tablets have been produced and for those people as well as patients who might not have access to water. Many formulations offered a chance for product line extension especially for elderly persons will have difficulties in administering conventional oral dosage forms because of hand shaking and dysphasia.

Giselle Carnaby -Mann, et. Al 2005

In this study, dysphagia patients preferred the Associate in Nursing ODT formulation because it required less effort to swallow and did not cause airway impairment. Adults with disorders may benefit from the ODT medicine delivery system in terms of convenience, compliance, and dose accuracy.

Shobhit Kumar, et. Al 2012

The FDTs have grown in popularity during the previous 10 years. FDT formulations have been used to promote a variety of medications. Fast disintegration, or dissolve in the mouth in the presence of saliva, is a crucial property of an FDT formulation. FDTs made using the direct compression approach are usually quite strong mechanically. Following therapy, such as moisture treatment, it can gain even more strength. FDTs have a quick onset of action and hence improve bioavailability.

Arijit Gandhi, 2012

Making the tablet matrix porous or adding super-disintegrant or effervescent excipients might help with fast disintegration, dissolving, or melting in the mouth, which is significant in MDT formulation. Clinical studies have shown that MDTs improve patient compliance, have a faster onset of impact, and improve bioavailability.

Ideal Properties:

In most cases, ODTs are favoured as an advanced dosage form above conventional immediate release dosage forms for a variety of medications.

It is considered to have specific properties that characterize it as ideal.

In the mouth, ODT, for example, disintegrates or dissolves in a couple of seconds. They must also not require water during administration, have adequate taste-masking capabilities, have a high drug loading capacity, a pleasant mouthfeel, be stable under environmental conditions, and leave no residue in the mouth following oral delivery.

Because of the quick presentation of medications in the buccal cavity, ODTs are the dosage form of choice for pharmaceuticals that are not suited for GI delivery for a variety of reasons.

ODTs may have advantages over immediate-release formulations in formulation design and production, unit packing, and patient management, no need for water to administer, and the rapid disintegration of tablet results in rapid dissolution and absorption, providing a rapid onset of action that may lead to increased therapeutic efficiency due to increased bioavailability. (12)

Need of ODT:

Patients who find swallowing standard tablets and capsules inconvenient can consider orally disintegrating dose forms. followed by a drink of water.

- Paediatric and geriatric patients.

  - Patients who are afraid of choking and refuse to do solid preparation.
  - A patient with continuous nausea who keeps on traveling or doesn't have access to water.
  - These formulations claim to offer higher bioavailability and a faster absorption rate.
  - The onset of action Limitations Most soluble diluents used in ODT formulations might cause absorptive dosage, which can cause stability issues.
  - The tablets may have an unpleasant flavour or texture if not correctly prepared.
  - a gritty sensation in the mouth.
  - Take precautions when dosing immediately after taking from the pack... (14)

Salient Features:

- Due to physical obstruction, the risk of choking or suffocation during oral administration of a traditional formulation reduces, resulting in more excellent safety.
- Immediate pharmaceutical therapy.
- Because the medicine is solid until it is taken, it should be stable for a more extended time.
- It should give a pleasant odour to the mouth.
- After oral administration, they should leave no residue in the mouth. It should melt or disintegrate in the mouth within few seconds.
- Taste masking and other excipients should be compatible.
- The mouthfeel should be pleasant.
- They must have spare strength to face up to the trials of the producing method and through the post-manufacturing handling. (1)

Merits:

- This dosage form is ideal for patients who are unable to swallow tablets, such as children, the elderly, the mentally ill, the crippled, and those who are unwilling.
- By minimising undesirable effects as a result of decreased dosage, pre-gastric absorption can increase bioavailability and clinical performance.
- It is convenient dosage form in case of patients who does not have water during their travel time.
- When opposed to liquids, it's easier to administer and get a precise dose.
- The medicine should disintegrate and absorb quickly, resulting in a quicker beginning of effect.
- No specific Packaging is required.
- Provide correct dosing, straightforward movability and producing, smart physical and chemical stability (12).

Demerits:

- Because rapid disintegrating tablets are hygroscopic, they must be stored in a humidified and temperature-controlled environment.
- For effective stabilisation and safety of the stable product, ODT needs special packaging. Mechanical strength is usually insufficient.
- FDT is challenging to synthesise with drugs that have significantly higher doses.
- Sometimes it possesses a mouthfeel.
- FDTs may leave an unpleasant taste and grittiness on the tongue if not formulated properly.
- FDTs are not ideal for drugs with a short half-life and frequent dosage, as well as those that require controlled or sustained release. (12).

Technologies used for manufacturing of ODTs

Lyophilization/Freeze-drying

- The removal of solvent from a frozen suspension or solution of a medication with structure-forming ingredients is known as lyophilization.
- Freeze-drying of the drug alongside additives imparts a shiny amorphous structure leading to a extremely porous and light-weight product..
- Lyophilized MDTs,have limited mechanical strength, poor temperature stability, and humidity. (2).

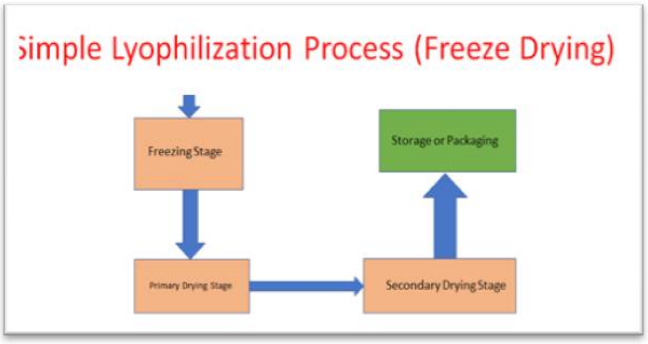

Fig 2

Molding:

- Water-soluble components are used to make moulded tablets in this approach.
- So that a hydroalcoholic solvent is used to saturate the powder combination, it is moulded into tablets at a lower pressure than conventional tablet compression, and the solvent is then removed by air drying. These possess porous structures that increase dissolution (2).

Spray drying

Spray drying can be used to make both fast and slow dissolving tablets. As a supporting matrix, hydrolyzed and non-hydrolyzed gelatine was used, while mannitol was used as a bulking agent. Spray drying an aqueous composition containing the support matrix and other materials into a very porous and fine powder is used in this process. Allen and Wang employed spray drying methods to create Oral dispersible tablets. (2).

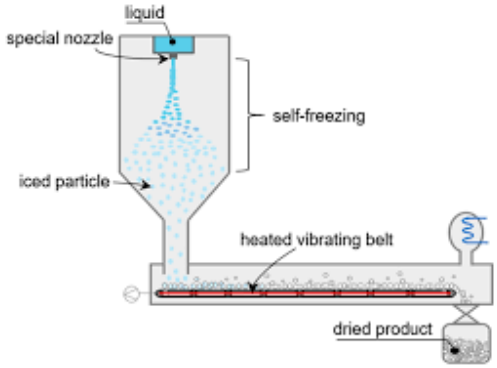

Fig. 3

Sublimation

(i) Porosity is increased by using a volatilizing agent

(ii) Camphor, a volatile chemical, can be employed in the tableting process and is sublimated from a formed tablet in a vacuum at 80°C for 30 minutes after preparation.

(iii) Matrix is an important element in the rapid disintegration of sublimated ODTs.

(iv) The Blend was compacted in a table before being sublimated, yielding an extremely porous structure. (2).

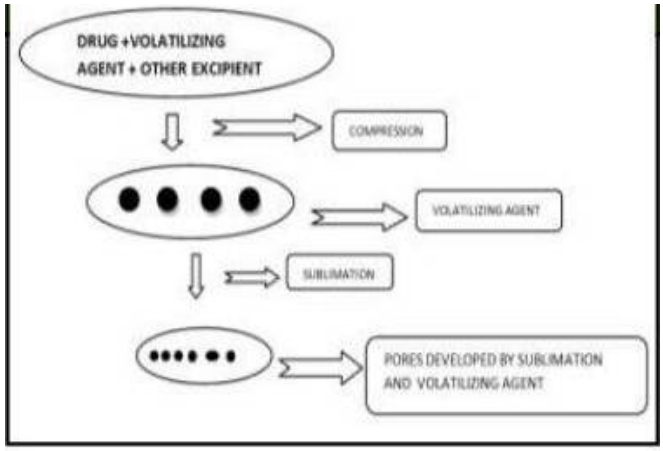

Fig.4

Direct compression methods

This technique is an easy way to formulate FDTs since limited number of processing stepscheap manufacturing costs and excellent dosage tolerance The tablet's final weight can significantly exceed that of conventional manufacturing methods. 18. Tablets compressed using direct compression disintegrate due to the single or combined effects of disintegrant, water-soluble excipients and effervescing agents. Tablet size and hardness significantly impact disintegrant efficacy, quickly done with medium or small tablets, with low

hardness and low physical resistance. To promote quick disintegration and high dissolution rates, a suitable and optimal concentration of disintegrants must be chosen 18,19Water-soluble excipients or effervescent substances can improve dissolving or disintegration qualities even more. Super disintegrants dissolve quickly due to swelling and water absorption combined. The expansion of the super disintegrant increases the wetted surface of the carrier. (2,3,8)

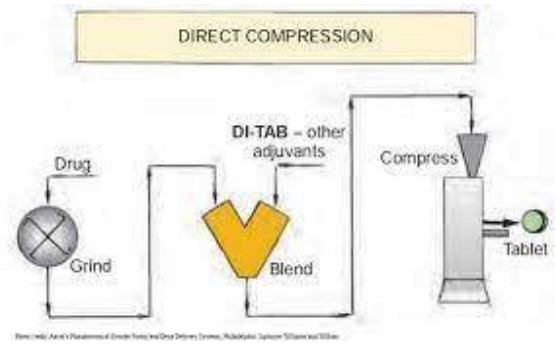

Fig. 5

Ingredients Which are used in preparation of ODTs

- **Super-disintegrants:**

A disintegrant in a tablet helps it to break up into tiny fragments when it comes into contact with gastrointestinal fluids. Super-disintegrants are used in modest doses in solid dosage forms, usually 1-10% by weight compared to the total weight of the dosage unit.

- **Fillers:**

The filler choice has a important impact on the disintegration time. Directly compressible spray-dried Mannitol, Sorbitol, xylitol, calcium carbonate, magnesium carbonate, and calcium are some examples of fillers.

- **Lubricants:**

Binders are used in tablets to give powders more cohesiveness and provide the essential bonding to produce granules. These materials produce a cohesive mass or compact known as a tablet when compacted. Polyvinyl pyrrolidone, Polyvinyl alcohol, Hydroxy propyl methyl cellulose.

- **Binders:**

Binders are added to tablets to give powders more cohesiveness and provide the essential bonding to produce granules, which, when compacted, form a cohesive mass or compact known as a tablet. For e.g., Polyvinyl pyrrolidone, Polyvinyl alcohol, Hydroxypropyl methylcellulose.

- **Surface active agents:**

The presence of esterase or bile salts (sodium dodecyl sulphate, sodium lauryl sulphate, polyoxymethylene sorbitan fatty acid esters) like surface-active agents play a role in drug release.

- **Flavours:**

Flavours and taste masking chemicals are used to make the products more attractive to patients. The use of those components helps to mask some of the active compounds' bitterness and unpleasant flavours. for example, Peppermint Oil, clove oil anise oil, bay oil, rose oil, aromatic oil etc. Aspartame, sugar derivatives are used as sweeteners.

II. CRITERIA FOR EXCIPIENT USED IN FORMULATION OF ODTs

It needs to be able to decompose rapidly. The ODTs should be unaffected by their unique properties, and there should be no interactions with any drugs or excipients. It should not interfere with the product's efficacy or organoleptic qualities. When choosing binders (single or multiple binders), the ultimate integrity and stability of the product must be considered. The melting point of excipients should be between 30 and 35 degrees Celsius. Binders come in a variety of forms, including liquid, semi-solid, solid, and polymeric... (3)

EVALUATION:

Bulk density, tapped density, Carr's index, Hausner's ratio, and angle of repose were calculated for the powder mix. The thickness, hardness, friability, weight variation test, drug content, and in-vitro release rate investigations of the tablets were all analysed.

1.General Appearance:

Consumer approval is determined by the size, shape, colour, existence or absence of an odour, taste, surface texture, physical flaws, and consistency and readability of any identifying marking, as are the tablet's overall look, visual identity, and overall "elegance.". (9)

2. Size and Shape:

Dimensionally describing, monitoring, and controlling the tablet's size and shape is possible. (1)

3.Tablet thickness:

The thickness of the tablet is an important factor to consider when evaluating it. The thickness of a tablet can be determined using a simple method. The thickness of five tablets is measured using Vernier Calliper. Millimetres are used to measure it.

4.Weight variation:

To check for weight variance, 20 tablets were chosen at random from the lot and weighed individually. [76] specified weight fluctuation Average Weight of Tablets in Percentage Deviation ten times 80 mg or less 80 mg to 250 mg 7.5 250 mg or higher (9).

5.Hardness/Crushing strength:

A tablet hardness tester (Monsanto hardness tester) assesses fracture strength, which is defined as the force required to break a tablet by radial compression. It's expressed in kilogrammes per square centimetre.

6. Friability:

The friability of a sample of six tablets is calculated using a Roche Friabilator.

The tablets are subjected to abrasion and shock in a plastic chamber that rotates at 25 rpm and lowers the tablets by 6 inches with each rotation. For four minutes, six preweight tablets are rotated at 25 rpm. The tablets are reweighed and the percentage of weight loss is calculated after particles are removed with 60 mesh screens. (Loss in weight / Initial weight) % Friability = 100 (9,1)

7.Wetting time:

The contact angle influences the wetting time of the dosage form. It must be evaluated to gain insight into the disintegration parameters of the tablets; a shorter wetting time indicates that the tablet will disintegrate faster. By placing a tablet on a piece of tissue paper folded twice, the time it takes for it to completely wet is calculated. (9)

8.Disintegration Time:

The test was conducted on six tablets using the apparatus described in I.P.-1996. The disintegration media was distilled water at 37°C 2°C, and the time it took for the pill to totally disintegrate with no appetising mass remaining in the apparatus was measured in seconds 28. Modifications to the Disintegration Test: For these dose forms, the standard disintegration test approach has severe limitations, and it is insufficient for assessing very short disintegration times. Because disintegration is required in the absence of water, the FDT disintegration duration must be adjusted. The test should therefore imitate breakdown in salivary contents. For this experiment, a Petri dish (10 cm diameter) was filled with 10 ml of water. The tablet was carefully inserted. (9,1)

9. In-Vitro Dispersion Time Test:

To evaluate the dispersion time, a 10 ml measuring cylinder was filled with 6 ml pure water and the tablet was dropped in. The time required for complete dispersion was determined. (9).

10. Dissolution test:

The evolution of ODT disintegration mechanisms is comparable to, if not similar to, that of normal tablets. Scouting runs for a bioequivalent ODT should start with dissolution conditions for medications mentioned in a pharmacopoeia monograph. Other media, such as 0.1 M HCl and buffer (pH 4.5 and 6.8) should be determined for ODT in the similar way that regular tablets are. With a paddle speed of 50 rpm, the USP 2 paddle device has been recommended as the most acceptable and common alternative for orally dissolving tablets. (1,9,10)

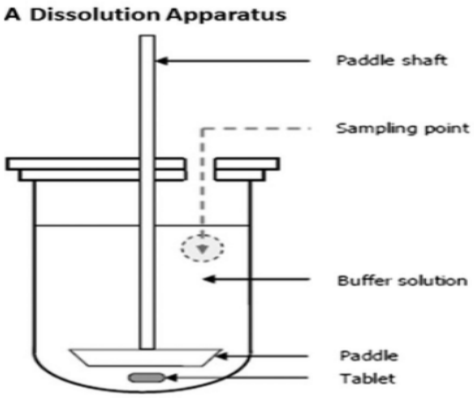

Fig.5

11.In vivo clinical studies:

In vivo investigations demonstrate ODT's pharmacokinetics, therapeutic effectiveness, and tolerance in the oral-oesophageal tract. The gamma scintigraphy experiment indicated that a fast-disintegrating dosage form's dissolution and oral clearance are both fast. Traditional dose

forms, such as pills, capsules, or liquids, have similar oesophageal transit and stomach emptying times. (7)

12.Disintegration in oral cavity:

Six healthy volunteers were given tablets from the optimum formulation, and the time necessary for full disintegration in the mouth was determined [80]. Accelerated stability study: The Orally disintegrating tablets are put in appropriate packaging and stored for the duration of the accelerated stability study as recommended by ICH guidelines. (1) 40 ± 10C (2) 50 ± 10C (3) 37 ± 10C and Relative Humidity = 75 % 5%. The tablets are removed after 15 days and examined for physical flaws, hardness, friability, disintegration, and dissolution, as well as the drug's composition and content. The resulting data is first-order fitted. the formula for calculating degradation kinetics the self-life at 25°C is calculated using accelerated stability data and the Arrhenius equation.

Conflict of Interest:

None declared by the authors.

III. CONCLUSION

MDTs have grown in popularity during the last ten years. MDT formulations rely on fast disintegration, dissolving, or melting in the tongue, which can be achieved by creating a porous tablet matrix or employing super disintegrant and/or effervescent excipients. Clinical studies have shown that MDTs improve patient compliance, have a faster onset of impact, and improve bioavailability. FDTs have several advantages over traditional dose forms, including increased efficacy, bioavailability, quick onset of action, and enhanced patient compliance. FDTs are very advantageous to paediatric and geriatric patients. FDTs often have lower mechanical strength. FDTs with suitable mechanical strength can be manufactured using novel technologies and additives. Tablets with innovative manufacturing processes provide a faster onset of action, higher bioavailability, fewer side effects, and improved safety.

REFERENCES

[1] M. Swamivelmanickam*, R. Manavalan and K. Valliappan, MOUTH DISSOLVING TABLETS: AN OVERVIEW 2010

[2] Prashant B Pawar* 1, Avinash G Mansuk1 , Kuldip H Ramteke1 , Y P Sharma1 , Sagar N Patil 2 MOUTH DISSOLVING TABLET: A REVIEW 2011

[3] Rewar S*1 , Singh C J 2 , Bansal B K 1 ,Pareek R1 , Sharma A K ,ORAL DISPERSIBLE TABLETS: AN OVERVIEW; DEVELOPMENT, TECHNOLOGIES AND EVALUATION 2014

[4] SatyabrataBhanja*, DanendrakuHardel and Muvvala Sudhakar, MOUTH DISSOLVING TABLETS OF LOSARTAN POTASSIUM: FORMULATION AND EVALUATION 2012

[5] Yi-Dan Chen1 Zhong-Yuan Liang1 Yan-Yan Cen1 He Zhang2 Mei-Gui Han2 Yun-Qiao Tian2 Jie Zhang2 Shu-Jun Li 2 Da-Sheng Yang2, Development of oral dispersible tablets containing prednisolone nanoparticles for the management of pediatric asthma,2015

[6] Sunita A.Chaudhary*a , Ankit B.Chaudharya , TejalA.Mehta, Excipients Updates for Orally Disintegrating Dosage Forms,2010.

[7] Shailesh Sharma*, Puneet Bhardwaj, G.D. Gupta, Formulation, Evaluation & Optimization of Mouth Dissolving Tablets of Losartan Potassium: Effect of Co-processed Superdisintegrants,2010

[8] Sagar A. Konapure1 *, Prafulla S. Chaudhari1 , Rajesh J. Oswal2 , Sandip S. Kshirsagar2 , Rishikesh V. Antre2 , Trushal V. Chorage3, "MOUTH DISSOLVING TABLETS" AN INNOVATIVE TECHNOLOGY,2011.

[9] Reeta Rani Thakur1 ,Abhinav Sharma1 , Mridul Kashiv1, Formulation, evaluation and optimization of mouth dissolving tablet of losartan potassium: A cost effective antihypertensive drug,2011

[10] Suhas M. Kakade*, Vinodh S. Mannur, Ketan B. Ramani, Ayaz A. Dhada, Chirag V. Naval, Avinash Bhagwat, Formulation and evaluation of mouth dissolving tablets of losartan potassium by direct compression techniques,2010

[11] Fady A. Malaak1 , Khalid Abu Zeid1 , Shahinaze A. Fouad1*, Mohamed A. El-Nabarawi2, Orodispersible Tablets: Novel Strategies and future challenges in Drug Delivery,2019

[12] Amit Kumar Nayak* and Kaushik Manna, Current developments in orally disintegrating tablet technology,

[13] Jaysukh J Hirani1*, Dhaval A Rathod1 ,Kantilal R Vadalia2, Orally Disintegrating Tablets: A Review,2008

[14] Dr.B.Venkateswara Reddy1 , K.Navaneetha1 , K.Venkata Ramana Reddy2 ,P.Poli Reddy3 ,P. Ujwala Reddy1 , T.Lavanya1 , Ch. Divya1 , FORMULATION AND EVALUATION OF FAST DISSOLVING TABLETS OF LOSARTAN POTASSIUM,2014

[15] A Gupta1*, AK Mishra1 , V Gupta1 , P Bansal2 , R Singh3 , AK Singh4, Recent Trends of Fast Dissolving Tablet - An Overview of Formulation Technology,2010.

[16] *Uma Shankar Mishra, S. K. Prajapati, P. Bharadvaj, A Review Article on Mouth Dissolving Tablet,2014

[17] Dali SHUKLA, Subhashis CHAKRABORTY, Sanjay SINGH, Brahmeshwar MISHRA *Mouth Dissolving Tablets I: An Overview of Formulation Technology,2008

[18] K Kavitha, Kumutha Subramaniam*, Boey Jia Hui, K. Santhi, SA Dhanaraj, and M Rupesh Kumar, Potential Drug Candidates for Fast Dissolving Drug Delivery - A Review,2013.

[19] Shobhit Kumar, Satish Kumar Gupta and Pramod Kumar Sharma, A Review on Recent Trends in Oral Drug Delivery-Fast Dissolving Formulation Technology,2012.

[20] PATIDAR ASHISH 1*, MISHRA P.1 , MAIN P.1 , HARSOLIYA M.S.2AND AGRAWAL S.3, A REVIEW ON- RECENT ADVANCEMENT IN THE DEVELOPMENT OF RAPID DISINTEGRATING TABLET,2011

[21] Tarique Khan*1 , Sayyed Nazim1 , Siraj Shaikh1 , Afsar Shaikh1 , Ashish Khairnar1 , Aejaz Ahmed1, AN APPROACH FOR RAPID DISINTEGRATING TABLET: A REVIEW,2011

[22] DipaliNannjkar*, Jitendra Shinde, Recent Trends of Mouth Dissolving Tablet: An Overview,2020.

[23] Penta Jyothi, Mouth Dissolving Tablets- Review,2012.

[24] Ramakant Joshi * , Navneet Garud and Wasim Akram, FAST DISSOLVING TABLETS: A REVIEW,2020.

[25] Sehgal Prateek*1 , Gupta Ramdayal1 , Singh Umesh Kumar1 , Chaturvedi Ashwani1 , Gulati Ashwini1 , Sharma Mansi1, Fast Dissolving Tablets: A New Venture in Drug Delivery,2012.

[26] Vivek Dave ⇑ ,RenuBala Yadav, Richa Ahuja, Sachdev Yadav, Formulation design and optimization of novel fast dissolving tablet of chlorpheniramine maleate by using lyophilization techniques,2016

[27] V.Dineshkumar , Ira Sharma and Vipin Sharma, A comprehensive review on fast dissolving tablet technology,2011.

[28] Sagar A. Konapure1 *, Prafulla S. Chaudhari1 ,Rajesh J. Oswal2 , Sandip S. Kshirsagar2 , Rishikesh V. Antre2 , Trushal V. Chorage3, "MOUTH DISSOLVING TABLETS" AN INNOVATIVE TECHNOLOGY,2011.

[29] Pranjal Jain, Shriya Jain, Ashwani Mishra and Anupam Pathak, A Review on Orodispersible Tablet,2014.

[30] Ujjwal Nautiyal*, Satinderjeet Singh, Ramandeep Singh, Gopal, Satinder Kakar, Fast Dissolving Tablets as A Novel Boon: A Review,2014.

[31] Ashish Garg* , M.M. Gupta, MOUTH DISSOLVING TABLETS: A REVIEW,2013.

[32] Sunidhi Mahant* ,Shivali Singla, Sachin Goyal, Bhimi Kumari, Abhishek Soni, Formulation and Evaluation of Mouth Dissolving Tablets of Ondansetron Hydrochloride Using Plantago ovata (Isapghula) Mucilage as Natural Super Disintegrating Agent,2017.

[33] H. K. Patil*, G. M. Patil, V. H. Jain, S. A. Tadvi, S. P. Pawar, A REVIEW ON MOUTH DISSOLVING TABLET,2017.

[34] Gaikwad Nikita1*, Bhagwat Mayur2, Jondhale Yogesh3, Recent Trends in Oral Medicine Delivery System : A Review,2020.

[35] Mayuri R Patil*, Nayan A Gujarathi, Bhushan R Rane, FORMULATION AND EVALUATION OF MOUTH DISSOLVING TABLET: REVIEW ARTICLE,2014.

[36] AJOY BERA and ASHISH MUKHERJEE*,A DETAILED STUDY OF MOUTH DISSOLVING DRUG DELIVERY SYSTEM,2013.

[37] Ashok Kumar*, Varun Bhushan, Manjeet Singh and Arti Chauhan, A REVIEW ON EVALUATION AND FORMULATION OF FAST DISSOLVING TABLETS,2011.

[38] Ravi Kumar*1 , Swati Patil4 ,M. B. Patil2 , Sachin R. Patil1 , Mahesh S. Paschapur3, Formulation Evaluation of Mouth Dissolving Tablets of Fenofibrate Using Sublimation Technique,2009.

[39] Mangesh MachhindranathSatpute* , Nagesh Shivaji Tour, Formulation and in vitro evaluation of fast dissolving tablets of metoprolol tartrate,2013.

[40] Kusuma Anushaa , Santosh K. Radab, Oral disintegrating tablets: best approach for faster therapeutic action of poorly soluble drugs,2022.