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MOUTH DISSOLVING TABLETS (MDTS)-A REVIEW ARTICLE

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Abstract:

Without water, MDTs immediately dissolve in the mouth or disintegrate.These are genuine mouth-dissolving tablets since they are made to dissolve in saliva amazingly quickly—in less than 60 seconds. To speed up the pace at which a tablet dissolves in the buccal cavity, MDT formulations incorporate super disintegrants. MDTs are a great alternative for elderly and paediatric patients and have benefits including simple production and portability, precise dosing, strong chemical and physical stability.Since MDTs break down and absorb more quickly than other dosage forms, in vitro drug release times are improved, which increases bioavailability. MDT compositions benefit from both the traditional tablet and liquid dosing forms. For the production of MDTs, a number of standard or patented procedures, such as mass extrusion, spray drying, the cotton candy process, sublimation, melt granulation, direct compression, freeze drying/lyophilization, and the phase transition process, have been developed. Brief information regarding MDTs, such as their definition, ideal properties, benefits, needs or requirements, key characteristics, difficulties in designing them, various manufacturing techniques, and evolution parameters for mouth-dissolving tablets, is provided in this article.

Keywords: Mouth dissolving tablets (MDTs), Superdisintegrants, taste masking, patented technology.

Introduction:

The oral route is still the best way to provide therapeutic agents despite significant breakthroughs in drug delivery since it is inexpensive, simple to administer, and encourages patient self-medication, which results in high patient compliance. The most widely used dose forms are tablets and capsules [1]. But "Dysphagia," or trouble swallowing, is a significant disadvantage of such dose formulations. A third of the population nearly 35% is thought to be affected by this.

Additional conditions linked to this illness include:

1. Parkinson's disease
2. motion sickness
3. Being unconscious
4. Senior citizens
5. Youngsters
6. People with mental disabilities
7. The absence of water.

There is a great deal of need for improved patient compliance. As a result, the demand for such tec hnology is growing tremendously. It takes a lot of money, effort, and time to build a chemical entity. Therefore, efforts are being concentrated on creating new drug delivery methods for already availab le medications that have improved efficacy and bioavailability, thereby lowering the dose and freque ncy of dosing to reduce adverse effects [2].The goal of a scientist or dosage form designer is always to increase a drug's safety while preserving its therapeutic efficacy.

Recent developments in Novel Drug Delivery Systems (NDDS) work toward this goal by creating an easy-to-use dose form to increase patient compliance.

The creation of a Mouth Dissolving Drug Delivery System, or Mouth Dissolving Tablet, has been the focus of pharmaceutical technologists [3].Some medications' bioavailability may be boosted by oral cavity absorption as well as by pregastric absorption of saliva containing scattered medications that enter into the stomach. Additionally, less medication undergoes first pass metabolism than with con ventional pills [4].

Mouth dissolving tablet (MDT)

It is a tablet that dissolves quickly in the saliva within a few seconds without the need for chewing or drinking water. Typically, a mouthdissolving tablet dissolves in the mouth between 15 seconds to 3 minutes. Many MDTs contain taste-masking chemicals and certain super disintegrants.

Ideal properties of MDTs [5]**:**

They should:

- ✓ Dissolve or disintegrate in the mouth in a matter of seconds;
- ✓ Not require water to be swallowed.
- ✓ Work well with flavour masking.
- ✓ Be transportable without posing a fragility risk.
- ✓ Have a satisfying mouthfeel.
- ✓ Leave little to no aftertaste in the mouth following oral use.
- ✓ Display a low sensitivity to environmental factors like humidity and temperature.
- ✓ Permit inexpensive production of the tablet using standard processing and packaging machinery

Advantages of MDTs [6,5]**:**

The advantages of both solid and liquid dose forms are offered by MDTs, in addition to specific features like:

1. Accurate dosing: Since unit solid dosage forms are easy to manufacture, transport, and store, they offer the benefits of accurate dosing as well as strong physical and chemical stability and make an excellent substitute for young and elderly patients.

2. Increased bioavailability: Drugs have increased bioavailability as a result of absorption through the mouth, pharynx, and oesophagus.

3. Quick action: The therapeutic effect kicks in quickly as the tablet quickly dissolves and is quickly absorbed in the oral cavity.

4. Patient compliance: The dosage form can be swallowed dry. As a result, it is practical for patients who are on the go and do not have quick access to water.

5. Convenience of administration: Particularly suitable for elderly, young, mentally challenged, and bedridden patients who have trouble swallowing.

6. Obstructionfree: This improves safety and compliance because there is no chance of suffocating in the airways from physical obstruction when swallowed.

7. Improved palatability: Pleasant mouth sensations, particularly for young patients who are protected from the drug's bitter taste by taste masking techniques.

8. Simple packaging: There is no need for special packaging. It may come in push-through blister packaging.

9. Business Avenue: Offer fresh business prospects through life cycle management, line extension, and product differentiation.

10. Economical: The production of tablets is made possible by conventional processing and packaging tools.

Challenges to develop MDTs [7,8]**:**

1. Mouth feel: MDTs shouldn't break up into bigger pieces in the mouth. The MDTs should be broken up into the smallest feasible particles after that. Additionally, the oral sensation is improved by the inclusion of flavours and cooling substances like menthol [4].

2. Tolerance: Since most medications are unpleasant to consume, MDTs typically include the medication in a form that masks its taste. After being administered, MDTs break down or dissolve in the patient's mouth, releasing the active components that come into touch with the taste buds. Thus, concealing the taste of the medications is essential for ensuring patient compliance [7,9].

3. Sensitivity to environmental conditions: Since the majority of the components used in MDTs are designed to dissolve in a small amount of water, MDTs should show little sensitivity to environmental factors like humidity and temperature [4].

4. Mechanical strength and disintegration time: MDTs are made of either a very porous and soft molded matrix or are compressed into tablets with very little force, which makes the tablets brittle an d/or friable, difficult to handle, and frequently necessitates specialised peeloff blister packing that co uld increase the cost. [7,9] The only tablet manufacturing technologies that can create tablets that ar e robust and hard enough to be put in multidose bottles are wow tab and durasolv [7].

5. Tablet size: A tablet's size affects how simple it is to administer. 7-8 mm tablets are reportedly the simplest to swallow, while tablets larger than 8 mm were said to be the easiest to han dle. As a result, it is challenging to create tablets that are both simple to hold and simple to swallow [7,4].

8. Hygroscopicity: Under normal circumstances of temperature and humidity, a number of orally di sintegrating dosage forms are hygroscopic and unable to preserve physical integrity [7,9].
As a result, they require humidity protection, which necessitates particular product packaging [7]

9. Aqueous solubility: Watersoluble medications present a number of formulation difficulties becau se they create eutectic mixtures that lower the freezing point and lead to the formation of a glassy s olid that could collapse upon drying due to the loss of supporting structure during the sublimation pr ocess [4,7,9]. Utilizing different matrixforming excipients, such as mannitol, which can induce crystal linity and hence contribute stiffness to the amorphous composite, can occasionally prevent such coll apse [7].

10. Drug content: The amount of drug that can be included in each unit dose restricts the use of te chnologies used for MDTs. The medication dose must be less than 400 mg for insoluble pharmaceu ticals and 60 mg for soluble drugs in lyophilized dosage forms [7,9]. This criterion is particularly diffic ult to formulate when creating mouth-dissolving oral films or wafers [7].

FORMULATION OF MDTs [6,10,11,12]**:**

The ideal properties of a medicine for oral absorption and pregastrointestinal absorption from MDTs are: Free from bitter taste Dose lower than 20 mg Small to Moderate molecular weight Good solubili ty in saliva Ability to permeate through oral mucosal tissue.

Bulking materials:

Bulking ingredients play a big role in the creation of fast-melting tablets. The substance provides diluent, filler, and cost-cutting properties. Additionally, increasing bulk also lowers the concentration of the active ingredient in the composition. Bulking agents enhance the textural qualiti es, which in turn promote the disintegration in the mouth. For increased aqueous solubility and good sensory perception, more sugarbased bulking agents are advised for this delivery system, such as mannitol, polydextrose, lactitol, DCL (direct compressible lactose), and starch hydrolystate. Bulking agents are incorporated into the final composition in amounts ranging from 10% to 90% by weight.

Emulsifying agents:

Emulsifying agents are crucial excipients for creating tablets that dissolve quickly because they spe ed up medication release without the need for chewing, swallowing, or water. Emulsifying chemicals are also helpful in stabilising immiscible blends and improving bioavailability. For the creation of fastacting tablets, a variety of emulsifiers are advised, including alkyl sulphates, propylen e glycol esters, lecithin, sucrose esters, and others. These substances can be included in the final c omposition in amounts varying from 0.05 to 15 percent by weight.

Lubricants:

Even though they are not necessary excipients, lubricants can help make these tablets more appeal ing once they dissolve in the mouth. Lubricants take away stickiness and help transfer drugs from th e lips down into the stomach.

Flavors and sweeteners:

The products are made more edible and attractive for patients by adding flavours and taste-masking chemicals. These substances help to mask the bitterness and unpleasant tastes of some a ctive compounds.

Table 1: Enlists various existing superdisintegrants and also their mechanism of action.

Name of superdisintegrants	Brand name	Concentration (%)	Mechanism of action
Sodium Starch Glycolate	Explotab,Primogel	2-8%	Swelling
Micro crystalline cellulose	Avicel, Celex	2-15%	Water wicking
Cross linked povidone	Cross povidone	2-5%	Swelling, Water wicking
Low substuted hydroxy propyl cellulose	LH-11, LH-12 (Grades)	1-5%	Swelling
Crosscarmellose sodium	Ac-Di-Sol	1-3%Direct compression 2-4% wet granulation	Wicking and swelling
Pregelatinized starch	Starch 1500	1-20%	Swelling

Superdisintegrants:

An excipient called a disintegrant is added to a tablet or capsule mixture to help the compacted mas s break apart when it is placed in a fluid environment.

Advantages:

1. Effective in lower concentrations.

2. Less effect on compressibility and flowability.

SELECTION OF SUPERDISINTEGRANTS:

Superdisintegrants typically alter disintegration rate, but when administered at large doses, they can also affect tablet hardness, friability, and tongue feel. Therefore, a number of desirable criteria that should be taken into account when choosing a suitable superdisintegrant for a given formulation incl ude:

- When a tablet comes into contact with saliva in the mouth or oral cavity, they quickly disintegr ate.
- Be able to make tablets that are less brittle by being compact.
- Give patients a positive mouthfeeling experience.
- Small particle sizes are therefore selected to ensure patient compliance.
- Flow well, as this enhances the whole blend's flow properties.

Mechanism of Superdisintegrants [13,14]:

The following list identifies the four main mechanisms of tablet breakdown.

1. Swelling:

Swelling is arguably the most generally recognised general mode of action for tablet disintegration. High porosity tablets have poor breakdown because there is insufficient swelling force. On the other hand, the tablet with poor porosity experiences enough swelling force. It is important to remember t hat when the packing percentage is extremely high, liquid cannot enter the tablet and the rate of disi ntegration is again slowed down.

2. Porosity and capillary action (Wicking):

The initial stage of disintegration is always capillary action. The intermolecular link of the tablet is we akened and the tablet is broken into small particles when it is submerged in an appropriate aqueous solution, which penetrates the tablet and replaces the air adsorbed on the particles.

The hydrophilicity of the medicine or excipient and the tableting circumstances affect how much wat er is absorbed by the tablet. In order to disintegrate by forming a hydrophilic network surrounding th e drug particles, these forms of disintegrants require maintenance of porous structure and low interf acial tension toward aqueous fluid.

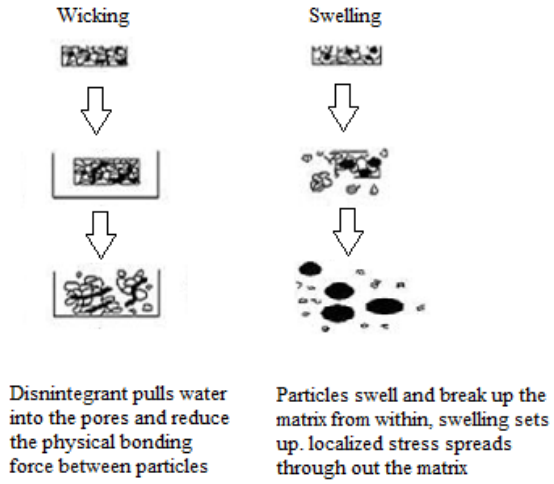

Figure 1: Disintegration of Tablet by Wicking and Swelling.

3. Due to disintegrating particle/particle repulsive forces:

Another disintegration process makes an attempt to explain why a tablet manufactured with 'nonsw ellable' disintegrants swells. Based on the finding that nonswelling particles also contribute to tablet disintegration, Guyot-Hermann proposed the particle repulsion theory. The mechanism of disintegration is the electric repulsive interactions between particles, and water is necessary for it. Researchers discovered that wicking comes second to repulsion.

4. Due to deformation

Particles that have disintegrated during tablet compression become deformed, and when these defo rmed particles come into touch with aqueous medium like water, they return to their original structur e. Occasionally, when granules underwent significant deformation during compression, the starch's ability to swell was enhanced. The tablet breaks up as a result of the distorted particles' growth in si ze. It has only lately been realised that this could be a mechanism of starch.

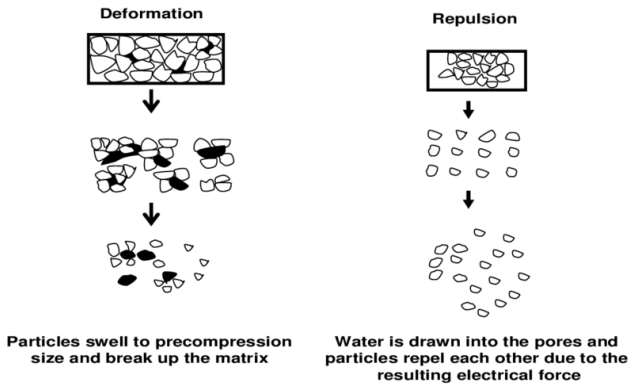

Figure 2: Disintegration by Deformation and Repulsion.

Various manufacturing techniques for MDDDS include:

1. Lyophilization
2. Moulding
3. Direct Compression
4. Cotton Candy Process
5. Spray Drying
6. Sublimation
7. Mass Extrusion
8. Nanonization
9. Fast Dissolving Film

1. **Freeze drying/Lyophilization** :

One of the earliest methods for making MDT involves the product being frozen first and then the water being sublimated from it. Due to the bulking agents' and occasionally the drug's appearanc e of glossy amorphous structure, the formulations exhibit improved dissolving properties. Relativ e water insolubility, small particle size, and strong aqueous stability in suspensions are the optim um pharmacological properties for this method.The two main issues with watersoluble pharmace uticals are the production of eutectic mixture due to a lowered freezing point and the formation of a glassy solid during freezing that may melt upon sublimation. Amorphous material gains stiffnes s and induces crystallinity when mannitol or other crystal-forming agents are added. The use of the freezedrying technique has the benefit of allowing me dicinal ingredients to be treated at normal room temperature, preventing harmful thermal effects. The usage of this technique is constrained by its high cost of equipment and processing. Lack of the required resistance for the final dosage forms' conventional blister packs is one of the drawb acks [15,16].

2. **Molding**[17]**:**

In order to achieve maximal drug disintegration, hydrophilic substances are used in the construct ion of tablets. A hydroalcoholic solvent is used to moisten the powder material before compressi on into a dosage form. After then, the solvent system is left to evaporate. Spray congealing the molten combination of hydrogenated cottonseed oil, sodium carbonate, lecithin, and polyethene glycol with an active component into lactosebased tablet triturate creates the flavour of the medi cation particles. The porous nature of the mass created by the moulding process, which is chara cterised by the removal of solvents by drying, facilitates quick disintegration.

3. Sublimation:

In this procedure, inert volatile chemicals like urea, urethane, naphthalene, camphor, etc. are ad ded to other excipients before the blend is compressed into tablets. Tablets disintegrate when th ey come into contact with saliva because pores in the tablet's structure caused by the removal of volatile substance via sublimation. Additionally, a number of solvents, including benzene and cyc lohexane, can be utilised as pore-forming agents.
By using this technique, mouthdissolving tablets with a highly porous structure and good mecha nical strength have been created[18,11].

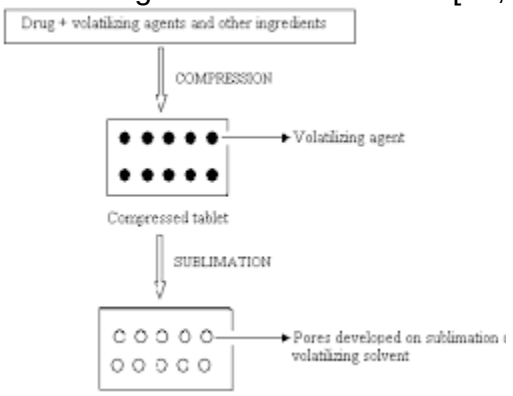

Figure 3: Schematic Diagram of Sublimation Technique for Preparation of MDT

4. Spray-Drying[19,20]**:**

Spray-drying has been employed by Allen et al. to create MDTs. The formulations included sodium starch glycolate/croscarmellose as a disintegrant, mannitol as a bulking agent, and hydr olyzed and unhydrolyzed gelatin as a supportive ingredient for the matrix. By incorporating an ac id (like citric acid) or an alkali, dissolution and disintegration were increased even further (e.g., s odium bicarbonate). Spraydrying the excipient suspension produced a porous powder that was t hen crushed into tablets. This approach produced tablets that decomposed in an aqueous soluti on in under 20 seconds.

5. Direct compression[21,22]**:**

The simplest and most economical method of producing tablets is direct compression.
Because of the availability of better excipients, particularly super-disintegrants and sugar-based excipients, MDT can be manufactured using this technique.

(a) Super-disintegrants: -

The inclusion of superdisintegrants affects the dissolution by affecting the rate of disintegratio n. The disintegration is also accelerated by additional substances like effervescent agents and water-soluble excipients.

(b) Sugar based excipients: -

Particularly bulking agents (like dextrose, fructose, lactilol, maltilol, maltose, mannitol, sorbitol , starch hydrolysate, polydextrose, and xylitol) with high aqueous solubility and sweetness ar e commonly used sugarbased excipients because they have a pleasant mouthfeel and taste-masking properties.
On the basis of moulding and dissolution rate, Mizumito et al. divided sugar-based excipients into two types:

Type 1 saccharides (lactose and mannitol) exhibit low mouldability but high dissolution rate.

Type 2 saccharides (maltose and maltilol) exhibit high mouldability but low dissolution rate.

Process of direct compression [23]

MILLING-SIEVING -MIXING -COMPRESSION

6. **Mass – Extrusion**[24, 23]:

Using methanol as a solvent and polyethene glycol, which is water soluble, to soften the mixture of components, it is then extruded into thin cylinders. which are then further cut into small tablets using a hot blade. With this technique, bittertasting medications can be covered up by creating ti ny granules that increase oral bioavailability.

7. **Nanonization** [25, 23,26]:

In a recently created nanomelt technology, the medicine is milled using a patented wet-milling method to reduce the drug's particle size to nano size. Surface adsorption on particular st abilisers, which are then included into MDTs, prevents the drug's nanocrystals from clumping tog ether. This method is especially useful for medications that are weakly water soluble. The quick disintegration/dissolution of nanoparticles, which increases absorption and raises bioavailability while lowering dose, as well as the technology's costeffective manufacturing method, convention al packaging due to its remarkable resilience and wide dose range, are additional benefits (up to 200 mg drug per unit).

8. **Cotton Candy Process[**27,19,20]:

The FLASHDOSE® is an MDDDS made utilising ShearformTM and Ceform TITM technologies i n order to get rid of the medication's unpleasant taste. A matrix known as "floss" is created from a combination of excipients, either by themselves or in conjunction with medications, and is prep ared using the Shearform technology. The floss is a fibrous substance that resembles cotton can dy fibres and is often made of saccharides such sucrose, dextrose, lactose, and fructose at temp eratures between 180 and 266 degrees Fahrenheit. Other polysaccharides, such polymaltodextri ns and polydextrose, can, however, be converted into fibres at temperatures 30–40% lower than sucrose.With this change, thermolabile medications may be safely added to the formulation. Due to the quick solubilization of sugars in the presence of saliva, the tablets produc ed using this procedure have a very porous character and have a very pleasant mouthfeel.

9. **Oral disintegrating or fast dissolving thin films [23,26]:**

It is a cuttingedge instant release tablet that offers a very practical way to take nutrients and pres cription drugs. In this method, a non-aqueous solution containing a drug, other taste-mimicking ingredients, and a water-soluble film-forming polymer (such as pullulan, carboxymethylcellulose, hydroxypropyl methylcellulose, hydr oxyl ethyl cellulose, hydroxyl propyl cellulose, polyvinyl pyrrolidone, polyvinyl alcohol, or sodium alginate, etc.) is prepared. The solvent is then allowed It is possible to include resin adsorbate or coated microparticles of a bitter medication into the film.When this film is put in the mouth, it quic kly melts or dissolves, releasing the medication as a solution or suspension. This system's prope rties include rapid drug delivery, dissolution in 5 seconds, paper-thin films with a size of less than 2 inches by 2 inches, and flavoured aftertaste.

PATENTED TECHNOLOGIES:

1. Zydis technology [28]
2. Orasolv technology [4,8]
3. Durasolv technology [4,29]
4. Wow tab technology [4,28,29,30]
5. Flash dose technology [28,29,31]
6. Flashtab technology [32,33]
7. Oraquick technology [28,34]
8. Dispersible tablet technology [4]
9. Advatab technology [33]
10. Nanocrystal technology [4,28,35]
11. Pharmabust technology [4,35]

12. Frosta technology (Akina) [36,4,35]

EVALUATION PARAMETERS [37,38,39,40,41]:

Preformulation studies for mouth dissolving tablet [42, 43]:

The term "preformulation study" refers to pharmaceutical and analytical research done prior to and i n support of formulation development activities of the drug substance's dosage form.
Preformulation provides the fundamental knowledge needed to create a formulation that is appropri ate for toxicological use. In addition to providing the framework for the drug combination with pharm aceutical excipients in the dosage form, it provides information necessary to define the nature of the drug substance. So, using the drug sample that had been collected, the following preformulation inv estigations were carried out.

1. Bulk Density (Db):

It is the proportion of the powder's total mass to its bulk volume. The weight powder, which had bee n put through a standard sieve #20, was poured into a measuring cylinder, and the starting weight w as recorded. The bulk volume is the original volume. Using this information, the bulk density is comp uted using the following formula. It is provided by and stated in g/ml.

$Db = M/ Vb$

Where M is the powder's mass and Vb is the volume of the powder in bulk.

2. Tapped Density (Dt):

It is the proportion of the powder's overall mass to its tapped volume. The powder was tapped 750 ti mes to determine its volume, and if there was a difference of less than 2% between the two volume s, the tapped volume was documented. If it is higher than 2%, tapping is repeated 1250 times, and t he volume of taps is recorded. Tapping was kept up until the volume difference between each succe ssive reading was under 2%. (in a bulk density apparatus).

It is calculated using $Dt = M / Vt$ and is expressed in g/ml.

Where M is the powder's mass and Vt is the powder's tapped volume.

3. Angle of Repose (θ):

The angle of repose can be used to calculate the friction forces in loose powder (**θ)** It is a sign of the powder's flow characteristics. It is described as the greatest angle that can be formed between the powder pile's surface and the horizontal.

$\tan(\theta) = h / r$

$\theta = \tan^{-1}(h / r)$

The angle of repose is θ . The height in cms is h.The radius in cms is r.
The funnel was set up on a stand at a specific height, and the powder mixture was allowed to flow t hrough it (h). The height and radius of the powder pile that resulted were then measured in order to determine the angle of repose. The powder particles were carefully watched to ensure that they wou ld roll and slide through the funnel's sides. Angle of repose and powder flow characteristics are relat ed.

Table 1: Angle of Repose as an Indication of Powder Flow Properties.

Sr. No	Angle of Repose	Type of Flow
1	<20	Excellent
2	20-30	Good
3	30-34	Passable
4	>34	Very poor

4. Carr's index (or) % compressibility: It indicates powder flow properties. It is expressed in percentage and is give

$$I = \frac{Dt - Db}{Dt} \times 100$$

Where, Dt is the tapped density of the powder and Db is the bulk density of the powder.

Table 2: Relationship between % compressibility and flow ability

% Compressibility	Flow ability
5-12	Excellent
12-16	Good
18-21	Fair Passable
23-35	Poor
33-38	Very Poor
<40	Very Very Poor

Evaluation of mouth dissolving tablets:

1. **Weight variation Test**[44]:

   20 tablets were chosen at random from the batch, and each one was weighed to look for weight variance.
   Table 3 displays the weight variation specification according to I.P.
   Specifications for Weight Variation Per IP

Average wt of Tablet	% Deviation
80mg or less	±10
More than 80mg but less than 250mg	±7.5
250mg or more	±5

The % weight variation of each individual tablet from the average weight is calculated by the given formula,

$\%\ WeightVariation$ = (Individual weight of each tablet − Average weight of 20 tablets)/ Average weight of 20 tablets × 100

2. **Hardness**[45]**:**

   Utilizing hardness testers such as those made by Pfizer and Monsanto, among others, the tablet s' hardness was tested. The amount of force needed to break the tablets is proportional to how h ard they are (kg/cm2).
   The measured values must match the reference value.

3. **Friability (F**) [46] **:**

   Using the Roche or Electro lab friabilators, the tablet's friability was determined. In a plastic cha mber that rotates at 25 revolutions per minute and drops a tablet from a height of 6 inches with e ach revolution, this gadget treats the tablet to the combined effects of abrasion and shock. The fr iabilator was loaded with a preweighted sample of tablets, and it was rotated 100 times. A delicat e muslin cloth was used to dust the tablets, and they were reweighed.
   The formula yields the friability (F).

F=(initial weight-final weight)/initial weight x 100

4. **Wetting time:**

The key factors for mouth-dissolving tablets are wetting time and water absorption ratio.
With the next technique, you may determine how long the pill needs to wet. In a tiny Petri dish fill ed with a watersoluble dye solution, a piece of filter paper that had been cut in a circle was put. The time needed for the tablet to completely wet was measured after the tablet was placed on th e paper (Figure 7). Tissue paper that had been folded twice was utilised by Bi Y. et al. and place d in a little culture dish (i.d. = 6.5 cm) with 6 ml of water.

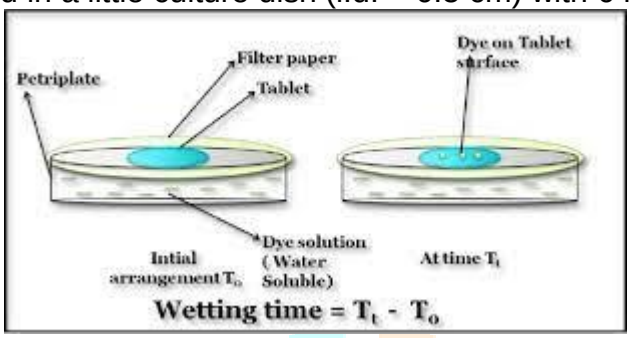

Figure 7: Wetting time of Mouth dissolving tablet. The time taken for appearance of dye colour on tablet is wetting time

5. **Water absorption ratio:**

comparable to the method used to determine wetting time (Figures 8). However, in this case, the tablet's initial weight and final weight (after thorough soaking) were assessed, and the water abs orption ratio was determined using the following formula:

R = (Wa - Wb) / 100

Where Wa and Wb are the weights of the tablet before and after wetting, respectively, and R is t he water absorption ratio.

6. **Uniformity of dispersion:**

Two tablets were maintained in 100 ml of water and swirled for two minutes at random.
22 meshes were used to filter out the dispersion. If there is no trace of residue on the tablet's scr een, it is said to have passed the test.

7. **Stability studies:**

During preformulation, several stability investigations, including rapid stability studies, intermedia te stability studies, and long term stability studies, were conducted. To determine their effects on the stability of the mouthdissolving tablet, the sample was exposed to higher temperatures, more humidity, or both.

8. **Taste or mouth feel:**

The mouth feel of the tablets was evaluated on healthy human participants.
For one tablet, the mouthfeel was assessed. A five-person panel uses the time-intensity method to assess how the mouth feels. A 40 mg sample was held in the mouth for 10 s econds, and the opinion was scored using a range of values.
(0: excellent, 1: flavourless, 2: hardly bitter, 3: bitter, and 4: terrible).

9. **In-vitro disintegration time**[47]:

Disintegration is the term for the breaking down of a tablet into smaller pieces.
Using disintegration test equipment that met I.P. requirements, the invitro disintegration time of a tablet was calculated. Six tubes in the basket, each holding one tablet, were filled.
Each tube should have a disc added before the device is operated with pH 6.8 (simulated saliva fluid) kept at 37°C as the immersion liquid. The assembly should be raised and lowered 30 times

per minute in a pH 6.8 solution that is kept at a temperature of 37°C. The amount of time, measu red in seconds, needed for the tablet to completely dissolve, leaving no discernible mass inside t he device, was noted.

10. **In-vitro dissolution studies**[45]:

Six tablets were chosen at random and submitted to drug release tests using a USP dissolution apparatus. A volume of 900 ml of dissolution liquid was utilised, and a temperature of 37 0.5 oC was maintained. Up to 30 minutes, 5 ml of the sample was taken at 5minute intervals and replac ed with 5 ml of new buffer solution. The samples were filtered and appropriately diluted, then an HPLC system or UV spectrophotometer was used to conduct the drug assay. The outcomes wer e contrasted with reference values.

CONCLUSION:

Tablets that dissolve in the mouth have a number of pharmacological benefits, such as increased ef ficacy compared to traditional dose forms. For instance, they offer better drug bioavailability than sta ndard tablets and capsules, require lower doses of active ingredient to be effective, and improve ab sorption profiles. Additionally, they might be appropriate for oral drug delivery of medicines like prote in- and peptide based therapies, which have a low bioavailability when taken orally.These products often break do wn quickly in the stomach. Due to the potential for pregastric absorption of medications administere d by MDTs, which may be appropriate for delivering relatively low molecular weight and highly perm eable pharmaceuticals to buccal and mucosal tissues of the oral cavity. MDTs and drug delivery hav e a lot of room for development in the future, but the technology is still in its infancy.

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