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REVIEW ARTICLE

ORAL DISINTEGRANTING TABLETS: AN OVERVIEW

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Abstract

Especially for patients who have dysphagia or difficulty swallowing, oral disintegrating tablets (ODTs) have developed as a novel dosage form to address a number of issues related to traditional solid dosage forms. An overview of the formulation techniques, assessment criteria, and uses of ODTs in pharmaceutical research are given in this study. In order to accomplish quick disintegration and dissolution of the tablet matrix upon contact with saliva, formulation processes such as sublimation, lyophilization, and direct compression have been thoroughly investigated. When evaluating the quality qualities of ODTs, evaluation metrics such as drug content homogeneity, hardness, friability, and disintegration time are essential. To improve patient acceptance and palatability, superdisintegrants and a variety of taste-masking techniques have been used. Furthermore, ODTs' adaptability goes beyond traditional oral administration; they may be used for emergency and travel medicine, as well as in paediatric and geriatric populations. All things considered, ODTs present a viable platform for enhancing patient convenience and compliance, which maximises therapeutic results. ODTs provide a number of benefits, such as improved patient compliance, simplicity of administration, and greater bioavailability because of their quick dissolving and larger surface area. To sum up, oral disintegrating tablets offer a potentially effective option for individuals who need readily administrable and comfortable dose forms. ODTs will be further optimised by ongoing research and development into manufacturing and formulation processes, increasing their applicability to a wider range of patient demographics and therapeutic areas.

Introduction:-

The most popular and practical approach, with good stability and a compact container size, is oral administration. The oral disintegrating tablet (ODT) does not require extra water since it quickly dissolves in the mouth when it comes in touch with saliva **[1, 2].** In particular for pediatric, geriatric, psychiatric, paralyzed, and bedridden patients, the necessity for quick disintegration, rapid start of action, and patient compliance led to the development of OTDs in the 1980s and the first publications on the formulation of ODTs utilizing cellulose derivatives **[3, 4].** ODTs are referred to be "a solid dosage form containing medicinal substances which disintegrate rapidly, typically within a matter of seconds, when placed upon the tongue" by the Food and Drug Administration (FDA) **[5].** ODTs are

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referred to be "a solid dosage form containing medicinal substances which disintegrate rapidly, typically within a matter of seconds, when placed upon the tongue" by the Food and Drug Administration (FDA) **[6, 7].**

ODTs can be an appropriate and optimum dose form for a medicine if it meets a number of requirements. For instance, the medication must be ionized, distributed, and mucosa-penetrated without leaving any residue in the oral cavity. Additionally, the API's molecular weight should be below 500 Da. For regular usage, the active component should have a short half-life, a pleasing flavor, and a low dose of less than 50 mg **[8, 9].** They are even more enticing to patients and industry due to their resistance to adverse climatic conditions, cheap manufacturing costs, and compatibility with current processing and packaging techniques **[10].**

Excipients should satisfy specific characteristics, such as water solubility, agreeable taste, sweetness, and quick dispersibility, because they play a significant role in the formulation of ODTs **[11].**

History or Background

An early version of the ODT was a tablet that would dissolve on the buccal (cheek) mucous membrane. This dose form was created for medications like steroids and opioid analgesics that have poor absorption via the digestive system yet are difficult to provide parenterally. The medicine can circumvent the digestive system via cheek absorption for quick systemic distribution. Not all ODTs have buccal absorption, and many have absorption and bioavailability that are comparable to those of conventional oral dose forms, with GI absorption still being the predominant route **[12, 13].** However, a quick disintegration period and a little tablet weight can improve buccal absorption. The early ODTs, created to help youngsters more comfortable ingesting vitamins, dissolved by effervescence rather than dissolution. The development of micro particles holding drugs that would release upon the tablet's effervescence and be inhaled by the patient allowed for the adaptation of this technique for use in medicine. Through better manufacturing techniques and components (such as the inclusion of mannitol to boost binding and shorten dissolve time), dissolution became more efficient than effervescence. In December 1996, a Zydis ODT formulation of Claritin (loratadine) received FDA clearance as the first ODT formulation of a medication **[14].** In December 1997 and June 1998, respectively, Zydis ODT versions of Klonopin (clonazepam) and Maxalt (rizatriptan) were released. USP method 701 for Disintegration is required by regulation in order for a tablet to fulfil the criteria of an orally disintegrating tablet. ODT medications should dissolve in less than 30 seconds, according to FDA advice released in December 2008. The FDA is looking into this practice since some of the currently available ODT formulations cannot pass the disintegration test because of how quickly ODTs dissolve **[15].**

Ideal Properties of ODT's

ODT performance is influenced by the manufacturing technique employed. Such pills must have the capacity to quickly dissolve and scatter or dissolve in saliva in order to eliminate the need for water. The development of several technologies has made it possible for ODT to carry out this special job. The following standards should be met by a perfect ODT:

1. It disintegrates and dissolves in the oral cavity in a matter of seconds without the need for water during oral administration.
2. Allows for maximum drug loading.
3. Strong enough to endure the rigours of the production process and post manufacturing handling.
4. A nice tongue feel
5. Not affected by changes in humidity or temperature in the environment
6. Affordable;
7. Versatile and compatible with current processing and packaging machinery.

Advantages [16-21]:

The advantages of ODTs include:

8. The pill can be swallowed dry.
9. Have a pleasant mouth feel and are compatible with flavor masking.
10. It is simple to administer to patients who are young, old, or have mental disabilities.
11. No lingering substance in the mouth following administration.
12. Conventional manufacturing and packaging equipment may be used to make tablets at a low cost.
13. Permit heavy drug loading.
14. Compared to liquids, an accurate dosage can be administered.
15. The medicine has a rapid beginning of effect due to its quick dissolution and absorption.

16. Transportation and administration are easier than with liquid medications.
17. As saliva travels down into the stomach, some medication is absorbed from the mouth, throat, and oesophagus. This reduces first pass metabolism, improving bioavailability and resulting in a lower dose and fewer adverse effects.
18. Improved safety as there is no chance of choking from physical blockage when swallowed.
19. ODTs are appropriate for regulated and sustained release actives.
20. Packaging in units.

Limitations: [22-24]

It includes:

1. The mechanical strength of the tablets is frequently insufficient. Therefore, careful handling is required.
2. If the pills are not made properly, they may leave an unpleasant taste and grittiness in the mouth.
3. Patients who concurrently take anticholinergic medications are not good candidates for ODTs.
4. Drugs with big dosages might be difficult to synthesize into ODTs.

Fig. 1:- Oral disintegrating tablets.

Challenges In Formulating ODT's

Palatability: [25-26]

Orally disintegrating drug delivery systems often include the medication in a taste-masked form because most medications are unpleasant to swallow. The taste-masking of the pharmaceuticals becomes essential for patient compliance since delivery methods crumble or dissolve in the patient's oral cavity, releasing the active chemicals that come into touch with the taste buds.

Mechanical strength: [27-28]

ODTs are made of either extremely porous or soft-molded matrices or are compressed into tablets with very little force, which makes the tablets fragile, difficult to handle, and frequently necessitates specialised peel-off blister packaging that could increase the cost. Only a select few technologies, such as Wowtab® by Yamanouchi-Shaklee and Durasolv® by CIMA laboratories, can create tablets that are sufficiently robust and hard to be put in multidose bottles.

Hygroscopicity: [29]
Several hygroscopic orally disintegrating dosage formulations are incapable of maintaining physical integrity in the presence of typical temperature and humidity levels. As a result, they require humidity protection, which necessitates specialised product packaging.

Amount of drug: [30-31]
The amount of medication that may be included in each unit dosage restricts the deployment of ODT technology. The medication dose must be less than 400 mg for insoluble pharmaceuticals and less than 60 mg for soluble drugs for lyophilized dosage forms. It might be difficult to formulate fast-dissolving oral films or wafers with this characteristic.

Aqueous solubility: [32]
Because they produce eutectic mixtures, which lower the freezing point and lead to the production of a glassy solid that may collapse upon drying due to the loss of supporting structure during the sublimation process, water-soluble pharmaceuticals present a variety of formulation issues. Using other matrix-forming excipients, such as mannitol, which can promote crystallinity and hence contribute stiffness to the amorphous composite, might occasionally avoid such collapse.

Size of tablet: [33]
The size of a pill affects how easy it is to swallow. 7-8 mm tablets are reportedly the simplest to swallow, while tablets bigger than 8 mm were said to be the easiest to manage. Consequently, it is challenging to create tablets that are both easy to grasp and easy to swallow.

Formulation of ODTs: [34-37]
Drug: The essential qualities of a medication for oral absorption and pre-gastric absorption from ODTs include:
- ✓ Small to moderate molecular weight,
- ✓ Less than 20 mg,
- ✓ No harsh taste,
- ✓ Good saliva solubility,
- ✓ And ability to pass 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 qualities, which in turn promote the disintegration in the mouth. For increased water solubility and improved sensory perception, additional sugar-based bulking agents are advised for this delivery method, such as mannitol, polydextrose, lactitol, DCL (direct compressible lactose), and starch hydrolystate. Between 10% and about 90% of the final composition's weight is added as bulking agents.

Emulsifying agents:
Emulsifying agents are crucial excipients for creating tablets that dissolve quickly because they speed up medication release without the need for chewing, swallowing, or water. Emulsifying chemicals are also helpful in stabilising immiscible mixtures and improving bioavailability. For the creation of fast-acting tablets, a variety of emulsifiers are advised, including alkyl sulphates, propylene glycol esters, lecithin, sucrose esters, and others. These substances can be included in the final composition 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 appealing once they dissolve in the mouth. Lubricants take away stickiness and help transfer drugs from the lips down into the stomach.

Flavours and sweeteners:
Patients find the items more pleasant and attractive when flavours and taste-masking ingredients are included. These additives help to mask the harshness and off-putting flavours of certain of the active substances.

Super disintegrants:
An excipient called a disintegrant is added to a tablet or capsule mixture to help break up the compacted mass when it is introduced to liquid.

Fig. 2:- Taste Masking Orally Disintegrating Tablet Formulations

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 include:

When the saliva in the mouth or oral cavity comes in touch with the tablet, it should:
1. Generate quick disintegration;
2. Be compactable enough to generate fewer friable tablets.
3. Give patients a positive mouth feeling experience. Small particle sizes are therefore selected to ensure patient compliance.
4. Flow well, since this enhances the whole blend's flow properties.

Various Manufacturing Techniques For Odt's 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 Films

Freeze-Drying or Lyophilization:[38-40]
After the product has been frozen during the freeze-drying process, the water is sublimed from it. Drugs including famotidine, loperamide, piroxicam, oxazepam, lorazepam, domeperidone, brompheniramine, olanzepine, ondansetron, and rizatriptan have all been manufactured using the proprietary Zydis technology (ZT) method. ZT makes completed dose units using a special freeze-drying method that are very different from traditional oral systems.

The process involves the following steps:

Stage 1- An aqueous medication solution or suspension is prepared in bulk, and it is then precisely dosed into blisters that are already created. Since the blister is the one that really shapes the tablet, it plays a crucial role in the whole product packaging.
Stage 2 - By putting the filled blisters through a specifically created cryogenic freezing process, which guarantees that the tablets have a porous matrix to support the rapid disintegration feature, it is possible to adjust the final size of the ice crystals. The bulk of the residual moisture is removed from the tablets during the sublimation process, which is where these frozen units are transported after being frozen.
Stage 3 - Using a heat-seal procedure to close the open blisters will assure product stability and safeguard it from changing environmental factors.

Lyoc
An aqueous solution, suspension, or emulsion comprising an API plus excipients is "freeze-dried" using lyoc technology. Because Lyoc is highly porous, it dissolves more quickly than crushed pills. A stable product is created throughout the Lyoc production process without the addition of additives, preservatives, or gelatins. Because it doesn't utilise organic solvents, this procedure is both economical and ecologically beneficial. CIMA taste-masking methods, tailored release, high dosage, and fixed-dose combo solutions are all compatible with Lyoc technology.

Quicksolv
The drug-containing matrix's aqueous dispersion or solution was frozen to create the porous solid form, which was then dried by solvent extraction—the process of extracting excess water from wet materials. The drug-containing matrix's aqueous dispersion or solution was frozen to create the porous solid form, which was then dried by solvent extraction—the process of extracting excess water from wet materials. Technologies include relatively low water solubility, small particle sizes (50 m), and strong water stability in suspension.

Tablet Moulding:
Moulded tablets always contain chemicals that dissolve in water, which causes the pills to dissolve quickly and fully. The following are the various tablet moulding methods:

Compression Moulding Process:
In this manufacturing technique, the powder mixture is moistened with a hydroalcoholic solvent before being compressed (compression moulded) onto mould plates to create a wetted mass.

After that, the solvent is eliminated by air drying, a procedure used in the production of tablet triturates. These tablets have a porous structure that speeds up dissolving and are less compact than compacted tablets.

Heat-Moulding Process:
The molten mass containing the medication is set during the heat-moulding process. In this method, the tablet is made using a mould, agar solution as a binder, blister packaging, and so on. A suspension comprising the medication, agar, and sugar is created, then the suspension is poured into the blister packing well, the agar solution is allowed to cool to become a jelly, and lastly the suspension is dried under vacuum at a temperature of around 30°C.

Moulding by Vacuum Evaporation without Lyophilization:
This procedure entails pouring the drug excipient mixture (in the form of a paste or slurry) into a mould with the desired dimensions, freezing the mixture to create a solidified matrix, and then hoover drying it at a temperature between its collapse temperature and equilibrium freezing temperature. A matrix that has partially collapsed as a result of this. This technique varies from lyophilization in that it evaporates free unbound solvent from a solid via the liquid phase to a gas under controlled circumstances as opposed to sublimation, which occurs in lyophilization.

Direct Compression (DC):
Due to their ability to be produced using standard tablet manufacturing and packaging equipment as well as the availability of tableting excipients with improved flow, compressibility, and disintegration properties, particularly tablet disintegrants, effervescent agents, and sugar-based excipients, DC is the most straightforward and economical tablet manufacturing technique for ODTs.

Cotton Candy Process: [41-42]
The FLASHDOSE® is an ODT made utilising ShearformTM and Ceform TITM technologies in order to get rid of the medication's unpleasant taste. A matrix known as "floss" is created from a mixture of excipients, either by themselves or in conjunction with medications, and is prepared using the Shearform technology.

The floss is a fibrous substance that resembles cotton candy fibers and is often formed of saccharides such sucrose, dextrose, lactose, and fructose between the temperatures of 180 and 266 °F. Other polysaccharides, such polymaltodextrins and polydextrose, can, however, be converted into fibers 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 produced using this procedure have a very porous character and have a very pleasant mouth feel.

Spray-Drying:
For the creation of ODTs, spray drying was utilised. The formulations included sodium starch glycolate/croscarmellose as a disintegrant, mannitol as a bulking agent, and hydrolyzed and unhydrolyzed gelatin as a supportive ingredient for the matrix. With the addition of an acid (like citric acid) or an alkali (like sodium bicarbonate), disintegration and dissolution were further accelerated. Spray-drying the excipient solution produced a porous powder that was then crushed into tablets. This approach produced tablets that decomposed in an aqueous solution in under 20 seconds.

Sublimation: [43-44]
ODTs with significant porosity have been created via sublimation. The excipients and volatile components are compressed into tablets to create a porous matrix, which is then sublimated. For this, inert solid substances with high volatility, such as urea, urethene, ammonium bicarbonate, ammonium carbonate, benzoic acid, camphor, and hexamethylene tetramine, have been utilised. The creation of the matrix's porosity was also suggested using solvents like cyclohexane and benzene. Water is used as a pore-forming substance in a process described by Makino et al.

Mass-Extrusion: [45]
With this technology, the active blend is softened using a solvent solution of water-soluble polyethylene glycol and methanol, and the softened mass is then ejected through an extruder or syringe to produce an extrude with a cylindrical shape that is then cut into even segments using a heated blade to create tablets. Drug granules that are bitter can also be coated in this manner to hide their flavour.

Nanonization:
Through the use of a patented wet-milling procedure, a drug's particle size is reduced to nano size utilising the recently created Nano melt technology. The drug's nano crystals are protected from agglomeration by surface adsorption on certain stabilisers, which are subsequently added to ODTs. This method is especially useful for medications that are weakly water soluble. The quick dissolution of nanoparticles, which increases absorption, bioavailability, and dose reduction, as well as the technology's cost-effective manufacturing process and conventional packaging due to its exceptional durability and wide range of doses (up to 200 mg of drug per unit), are additional benefits.

Fast Dissolving Films:
It is a brand-new area of ODT's that offers a highly practical way to take prescription drugs and dietary supplements. In this method, a non-aqueous solution containing a water-soluble film-forming polymer (such as sodium alginate, pullulan, carboxy methylcellulose, hydroxypropyl methylcellulose, hydroxyl ethylcellulose, or polyvinyl pyrrolidone) is created, after the solvent has evaporated, the medication and other taste-mapping components are allowed to create a film. If the medicine is bitter, resin adsorbate or coated microparticles of the drug may be added to the film. When put in the mouth, this film quickly melts or dissolves, releasing the medication as a solution or suspension. This system's properties include immediate medication administration, disintegration in 5 seconds, paper thin films with less than 2*2 inch dimensions, and flavor-infused after taste.

Evaluation of ODTS

Precompression characterization of tablet: [46]

Prior to compression, the bulk and tapped densities of the powder blends should be analysed. From these values, the compressibility index and Hausner's ratio should be determined, and the flow characteristics of the powder blends should be evaluated using the angle of repose.

Angle of repose:

The angle of repose may be used to calculate the frictional forces in loose powder or grains. This is the angle formed between a mass of grains or powder and the horizontal plane. The funnel technique determines it. Pour the mixture through a cone-shaped funnel that may be lifted up to its maximum height (h). Consider measuring the heap's radius (r). The following formula is used to determine the angle of repose:**Tan ɵ= h\r**

Table 1:- Angle of repose.

Angle of repose	**Flow property**
>25°	Excellent
25°-30°	Good
37°-40°	Fair
Beyond 40°	Poor

Bulk density and tapped density: [47]

The 100 ml measuring cylinder should contain a precise weighted quantity of powder. Note the original volume, then tap the cylinder 100 times on a flat, firm surface, recording the tapped volume of packing each time. The following should be used to compute the tapped density (TD) and the bulk density (BD):

Formula:

Bulk density= weight of powder\volume of packing

Tapped density= weight of powder\tapped volume of packing

Carr's index (Compressibility):

A powder's compressibility index may be calculated using the formula below:

Carr's index (%) = (tapped density- bulk density) ×100/ tapped density

Table 2:- Carr's index.

Carr's index	**Properties**
5-15	Excellent
12-16	Good
18-21	Fair to passable
2-35	Poor
33-38	Very poor
>40	Very very poor

Hausner's ratio:

The Hausner's ratio measures how easily powder flows. The formula used to compute it is as follows:

Hausner's ratio = bulk density\ tapped density

Post compression characterization of tablets:

Weight variation test:

20 tablets are chosen at random, and the weights of each are measured; the average weight is then determined.

Tablet hardness:

The crushing strength may be determined using the Monsanto hardness tester.

Tablet Friability:

Twenty formulation pills should be weighed, and they should be friabled in a Roche friabilator for four minutes at a speed of 25 rpm. To determine the percentage of friability, weigh the tablets and compare them to their starting weights.

Thickness:
The die and punches chosen for creating the tablets will determine the tablet's diameter and punch size. A screw gauge is used to measure tablet thickness. Tablet thickness should not deviate from the target value by more than 5%. To make packaging easier, the thickness must also be kept under control. Ten pre weighed tablets should each have their specific thickness measured in millimetres (mm) using a screw gauge. Reporting should include the average thickness and standard deviation.

In vitro disintegration time:
Using a tablet disintegration tester, six tablets are used in water at 37 ℃ for this test. The amount of time needed for the pills to break down and pass entirely through the sieve is noted.

In vitro dissolution study:
The release rate of drug from ODTs is determined using USP dissolution testing apparatus 2 (paddle method). The dissolution test is performed using 900 ml of 0.1 N HCl at 37±0.5 ºC at 100 rpm.

Wetting time:
Use a piece of tissue paper that is 10.75 mm x 12 mm, fold it twice, and put it in a culture dish with a diameter of 6.5 cm and a water content of 6 ml. Place a tablet on the paper and note how long it takes for it to completely wet.

In vitro dispersion time:
The pills should be dissolved in 10 ml of pH 7.4 phosphate buffer solution at 37 0.5 ℃. Calculate how long it takes for the pills to dissolve completely.

Water absorption ratio (R):
Using a digital weighing balance, record the tablet's weight (Wb) before putting it in the petri dish. Take note of the pills' weight (Wa) upon wetting. The following equation may be used to calculate the water absorption ratio, R.

Marketed Formulations of ODT's

1. **Claritin Reditabs:** These pills, which have loratadine as their main constituent, dissolve fast on the tongue. They are frequently used to treat allergy symptoms like runny nose, itchy eyes, and sneezing.
2. **Zofran ODT**: Utilised to stop nausea and vomiting brought on by chemotherapy, radiation treatment, and surgery. Ondansetron is the active component in the orally disintegrating pills, which can be taken without water.
3. **Ability Discmelt:** Aripiprazole, an antipsychotic drug used to treat disorders including schizophrenia and bipolar disorder, is present in these oral disintegrating tablets. For people who have trouble swallowing, they might be an option because they dissolve fast in the mouth.
4. **Maxalt-MLT:** This medication contains the active ingredient rizatriptan and is used for the treatment of migraines. Maxalt-MLT tablets disintegrate rapidly, allowing for faster absorption and relief of migraine symptoms.
5. **Suboxone Film:** Buprenorphine and naloxone are ingredients in the opioid dependency treatment drug Suboxone. The film formulation is easy to consume and ensures optimum medicine administration because it dissolves fast in the mouth.
6. **Orapred ODT:** Prednisolone sodium phosphate, a corticosteroid, is an ingredient in an oral disintegrating tablet formulation that is used to treat a number of ailments, such as asthma, allergic responses, and some autoimmune illnesses.
7. **Ondansetron ODT:** Utilised to stop nausea and vomiting brought on by chemotherapy, radiation treatment, and surgery. Ondansetron is the active component in the orally disintegrating pills, which can be taken without water.
8. **Lamictal ODT:** Lamotrigine, the active component of Lamictal's orally disintegrating pills, is used to treat bipolar disorder and epilepsy. They disintegrate fast, making administration and absorption simpler.
9. **Risperdal M-Tab:** Risperidone is an antipsychotic drug found in these orally disintegrating tablets that is used to treat schizophrenia and bipolar disorder. Patients who have trouble swallowing might use the pills as an alternative since they quickly dissolve in the mouth.
10. **Remeron SolTab**: The active component of Remeron SolTab pills, mirtazapine, is used to treat depression. These pills dissolve quickly in the mouth, making administration and absorption simpler.

Table 3:- Some other marketed formulations.

Product	Manufacturer	API	Use
Listerine	Pfizer	Cool mint	Mouth fresheners
Triaminic	Novartis	Dextromethorphan HBr	Cough suppressants
Suppress®	InnoZen®, Inc	Menthol	Mouth fresheners
Chloraseptic	Prestige	Benzocaine Menthol	Local anesthetic
Gas-X	Novartis	Simethicone	Anti Flatuating
Theraflu	Novartis	Dextromethorphan HBr	Anti allergic
Setofilm	BioalliancePharma	Ondansetron	Prevention of Nausea and Vomiting
Zuplenz(R)	MonoSol Rx	Ondansetron	Prevention of Nausea and Vomiting
Donepezil Rapid film	Labtec	Donepezil	Alzheimer's disease
Sudafed PE	Wolters Kluwer Health Inc.	Phenyleprine	Relieving Congestion
Klonopin Wafer	Solvay Pharmaceuticals	Clonazepam	Treatment of anxiety

Recent Studies On Super Disintegrating Tablets:

Here are some recent studies on super disintegrating tablets:

1. "Development and evaluation of oral super disintegrating tablets containing antiviral drugs" - The creation and assessment of super dissolving tablets containing antiviral medications are the main topics of this study. The tablet composition was improved by the researchers for quick disintegration and better medication solubility. They also assessed the pills' stability and release profile.
2. "Superdisintegrants: Recent advances in tablet formulation" - Recent developments in the realm of superdisintegrants—essential elements of super dissolving tablets—are covered in this review article. The paper gives a general summary of several superdisintegrants, their modes of action, and how they help tablets dissolve quickly. Additionally, it covers current tactics to improve the effectiveness of super dissolving tablets.
3. "Enhancement of dissolution rate and Oral Bioavailability of Poorly Soluble Drugs using Superdisintegrants" - This study explores the use of superdisintegrants to speed up the oral bioavailability and dissolving rate of poorly soluble medicines. The scientists created super-disintegrating tablets with several super-disintegrants and assessed how well the drugs dissolved and were absorbed. To evaluate the bioavailability of the medications from the super dissolving tablets, they also carried out pharmacokinetic investigations.
4. "Development and evaluation of orally disintegrating tablets containing multiple drugs for fixed-dose combination therapy" - The development and assessment of multi-drug orally disintegrating tablets for fixed-dose combination treatment is the main focus of this project. The disintegration time, drug release profile, and pharmacokinetic properties of the researchers' super dissolving tablets, which they created and tested. The purpose of the study was to develop an easy-to-use dosage form for patients requiring fixed-dose combination medication.

These are only a few recent research on pills that dissolve quickly. The creation, assessment, and optimization of super dissolving tablet formulations for diverse medications and therapeutic uses are all ongoing research topics.

Conclusion:-

Oral disintegrating tablets (ODTs) represent a significant advancement in pharmaceutical drug delivery systems, offering a convenient and effective alternative to traditional tablet forms, especially for specific patient populations. The rapid disintegration and dissolution of ODTs in the oral cavity, without the need for water, enhance patient compliance, particularly among pediatric, geriatric, and psychiatric patients who may have difficulty swallowing conventional tablets. The development and formulation of ODTs involve various innovative technologies, including lyophilization, direct compression, and molding. Each method has distinct advantages and challenges, influencing the final product's mechanical strength, disintegration time, and patient acceptability. Advances in taste-masking techniques and the incorporation of new excipients have further improved the palatability and therapeutic efficacy of

ODTs, broadening their application across diverse therapeutic areas. Despite their benefits, the production of ODTs requires careful consideration of factors such as drug properties, excipient compatibility, and manufacturing processes to ensure consistent quality and performance. Future research and technological advancements are expected to address existing limitations, such as the mechanical strength of the tablets and the stability of active ingredients, thereby expanding the scope and effectiveness of ODTs.

In conclusion, ODTs offer a promising and patient-friendly drug delivery option that aligns with the growing demand for personalized and convenient medication. Continued innovation in this field will likely result in even more effective and widely accessible ODT formulations, ultimately improving patient outcomes and adherence to therapy.

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