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REVOLUTIONIZING DRUG DELIVERY: THE RISE OF ORODISPERSIBLE TABLETS

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Abstract:

In the pharmaceutical industry oral route is considered as the safest and convenient route. Orodispersible tablets (ODTs) are solid dosage forms containing drugs that disintegrate in the oral cavity within less than 1 minute leaving an easy to swallow residue. These dosage form contains super disintegrants which imparts quick disintegration with presence of saliva and can be swallowed easily. ODTs are the very good choice for the paediatric and geriatric patients. To improve the bioavailability of many drugs, orodispersible drug delivery systems are used extensively. Advanced technologies used for manufacturing orodispersible tablets are by direct compression method, freeze drying method, sublimation method, mass extrusion and cotton candy process. Taste is the important factor because these tablets disintegrate directly in the mouth. Orodispersible tablets have a quality that disintegrates rapidly generally in seconds when put on the tongue because it contains mainly medicinal substances in the solid dosage form. This new odt technology is enhancing the patient life cycle and making a convenient dosing system for paediatric, geriatric, and psychiatric patients with dysphagia because it directly addresses the pharmaceutical and patient needs. This new technology encourages the academic industry to develop a newer orally disintegrating formulation and technology or evaluation methodology which is suitable for drug candidates for its future prospects. The current article is focused on ideal characteristics, advantages and disadvantages, various technologies developed for ODT, evaluation methods along with recent research and future potential.

Keywords: *orodispersible tablets, mechanism of disintegration, fast dissolving films, bioavailability, super disintegrants, orodispersible technologies.*

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INTRODUCTION:

Solid dosage forms are widely favoured due to their affordability, ease of use, precise dosage delivery for self-medication, pain reduction, and, most importantly, patient compliance. Tablets and capsules are the most popular solid dosage forms. However, a notable drawback of these forms is Dysphagia, which is common across all age groups and is characterized by difficulty in swallowing. Common complaints regarding tablet swallowing include their size, surface, and taste. Geriatric, paediatric, and traveling patients, particularly those without immediate access to water, often require easily swallowable dosage forms.

To address these medical needs, pharmaceutical technologists have innovated a novel oral dosage form known as Orally Disintegrating Tablets (ODTs). These tablets rapidly disintegrate in saliva, typically within seconds, without the need for water. This facilitates faster drug dissolution and absorption, leading to quicker onset of clinical effects and enhanced drug bioavailability compared to conventional dosage forms. ODTs release medication in the mouth for absorption through local oral mucosal tissues and across various segments of the gastrointestinal tract (GIT), including the pre-gastric (oral cavity, pharynx, and esophagus), gastric (stomach), and post-gastric (small and large intestine) regions.[1-7]

The term "orodispersible tablet," as defined by the European Pharmacopoeia, refers to a tablet that disperses in the mouth within 3 seconds before swallowing. Also known as "ODTs," these tablets rapidly disintegrate or dissolve in the mouth due to their porous and quick-melting nature, making them fast-acting. Various conventional methods such as freezing & drying, tablet moulding, spray drying, mass extrusion, sublimation, and direct compression are utilized for the preparation of orally disintegrating tablets.

ODTs exhibit rapid response times and disintegration within seconds to a minute. According to the United States Food and Drug Administration (FDA), ODTs are solid substances containing active ingredients that dissolve quickly in the mouth within a few seconds of being placed on the tongue. Upon contact with saliva, ODTs release active drugs, leading to maximum drug bioavailability compared to conventional dosage forms due to rapid dispersal or disintegration.

ODT technology employs hydrophilic excipients selected based on the drug's physicochemical properties, particularly its hydrophilicity or hydrophobicity. In saliva, the active agent dissolves rapidly, regardless of any encountered membranes, unless protected by pre-gastric absorption. This review aims to examine the current advancements in ODT technology, the sustainability of drug candidates, and the characterization of ODTs.

Desirable Characteristics of Orally Dispersible Tablets:

- No water required for oral administration [7-9]
- ODTs exhibit reduced sensitivity to environmental factors and temperature.
- High drug loading capacity.
- They are less prone to breakage and possess adequate hardness[6].
- Minimal or no residue left in the mouth after administration.
- ODTs offer a pleasant, acceptable mouthfeel and effectively mask the taste of incorporated drugs.
- Cost-effective production methods.
- Preparation and packaging adhere to conventional techniques.

Advantages of Orally Dispersible Tablets[10]:

- Facilitates administration to patients unable to swallow, including the elderly, stroke victims, and bedridden patients; individuals who should not swallow, such as those with renal failure; and patients who refuse to swallow, such as paediatrics, geriatrics, and psychiatric patients.
- Enhances patient compliance, particularly for disabled, bedridden patients, and individuals traveling or with busy schedules who lack ready access to water.
- Improved mouthfeel properties alter the perception of medication, especially for paediatric patients, by masking the bitter taste of drugs.
- Offers convenience in administration and precise dosing compared to liquid formulations.
- Provides the advantages of liquid medication in solid preparation form.
- Facilitates rapid drug absorption in the pre-gastric area (mouth, pharynx, and oesophagus), leading to quicker onset of action.
- Pre-gastric absorption can enhance bioavailability, reduce dosage, and improve clinical performance by minimizing side effects.

- Presents new business opportunities such as product differentiation, line extension, life-cycle management, exclusivity in product promotion, and extension of patent life.

Disadvantages of Orally Dispersible Tablets[11,12]:

- Orally dispersible tablets are hygroscopic, necessitating storage in dry conditions.
- Some formulations may affect mouthfeel.
- Special packaging is required for proper stabilization and safety of stable products.
- Ensuring dose uniformity poses a technical challenge.

Selection of Orally Dispersible Tablets (ODTs) Drug Candidates[13]

- Consider drugs with significantly different pharmacokinetic profiles compared to conventional dosage forms, such as selegiline, apomorphine, buspirone, etc.
- Prioritize drugs that generate toxic metabolites via first-pass liver and gastric metabolism or those with significant absorption in the oral cavity and pre-gastric segments of the gastrointestinal tract.
- Ideal candidates should have the ability to diffuse and partition into upper gastrointestinal epithelium (log P > 1, preferably > 2), and permeate oral mucosal tissue.
- Patients concurrently taking anticholinergic medications may not be suitable candidates for ODTs.
- Patients with conditions like Sjogren's syndrome or dry mouth due to reduced saliva production may not be optimal candidates.
- Drugs with short half-lives requiring frequent dosing, possessing a very bitter taste, or requiring taste masking that cannot be achieved, or those necessitating controlled or sustained release are unsuitable for ODT formulation.

Ingredients Used in the Preparation of Orodispersible Tablets (ODTs)[48-50]

Super disintegrants: Super disintegrants enhance the rate of disintegration and dissolution, exhibiting high efficiency even at low concentrations.
Examples: Crosspovidone, Microcrystalline Cellulose, Sodium Starch Glycolate, CMC.
Lubricants: Lubricants reduce friction during compaction and ejection of tablets.
Examples: Magnesium Stearate and Talc.
Binders: Binders must possess suitable melting characteristics, provide desired binding quality, and facilitate fast release of active ingredients. They also ensure stability and integrity of tablets.
Examples: Hydroxypropyl Methylcellulose, PVP, Polyvinyl Alcohol.
Emulsifying Agents:
Emulsifying agents enhance bioavailability and stabilize immiscible blends. They improve solubility of ODTs by reducing interfacial tension.
Example: Sodium Dodecyl Sulphate.
Colour: Addition of colour enhances the appearance of the dosage form.
Examples: Amaranth 3, Sunset Yellow, Red Iron Oxide.
Flavours: Flavours mask undesirable taste and bitterness, enhancing acceptability and patient compliance.
Examples: Citrus Oil, Vanilla, Clove Oil, Peppermint Oil.
Bulking Agents: Bulking agents improve textural characteristics of the drug, aiding in mouth disintegration.
Examples: Mannitol, Starch Hydrolysate.

CHALLENGES IN FORMULATION OF ORODISPERSIBLE TABLETS[41-47]

Disintegration time and mechanical strength: Formulating Orodispersible tablets (ODTs) typically aims to achieve disintegration times of less than a minute. However, ensuring adequate mechanical strength poses a significant challenge. Many ODTs are delicate, increasing the risk of breakage during packaging, transportation, or patient handling. Tablets utilizing technologies like Zydis require specialized packaging to prevent damage. It's natural that enhancing mechanical strength may prolong disintegration times. Therefore, striking a balance between these two factors is crucial for optimal performance.

Taste Masking: Patient compliance is greatly influenced by taste perception. To ensure optimal compliance, the number of taste-masking agents used in dosage forms should be minimized to prevent unnecessary increases in tablet size. Additionally, taste-masking technologies employed must be compatible with Orodispersible Tablet (ODT) formulations. Various techniques are available for masking the bitter taste of drugs. These include masking with ingredients such as flavors, sweeteners, and amino acids; polymer coating; conventional granulation; ion-exchange resins; spray congealing with lipids; formation of inclusion complexes with cyclodextrins; freeze-drying processes; creation of multiple emulsions with gelatin, gelatinized starch, liposomes, lecithins, or lecithin-like substances; as well as utilization of surfactants, salts, or polymeric membranes.

Sensitivity to environmental conditions: Orodispersible tablets (ODTs) typically require low sensitivity to environmental conditions like humidity and temperature. This is because the materials utilized in ODTs are primarily designed to dissolve efficiently with minimal water content.

Mouth feel: ODTs should maintain their integrity in the oral cavity, ensuring they do not disintegrate into larger particles and leave minimal to no residue after administration. Additionally, the incorporation of fillers such as mannitol, flavors, and cooling agents like menthol can enhance the mouthfeel of the tablets.

Cost: The technology employed for Orodispersible tablets (ODTs) should be economically viable, ensuring the cost-effectiveness of the final product. Techniques such as Zydis and Orasolv, which necessitate special technologies and specific packaging, significantly escalate the overall production cost.

Size of Tablet: Easy administration of tablets depends on the size of the tablets, which cannot be achieved easily.

Amount of drug: The incorporation of drug content in each unit dose of Orodispersible tablets (ODTs) is constrained by limitations. In lyophilized dosage forms, the drug dose should not exceed 400 mg for insoluble drugs and 60 mg for soluble drugs.

Water solubility: Water-soluble drugs often form eutectic mixtures, leading to a depression in freezing point and the creation of a glassy solid, which may collapse during the drying process due to the loss of supportive structure during sublimation. This collapse can be mitigated by employing matrix-forming excipients, like mannitol, which induce crystallinity and provide rigidity to the amorphous composite, thereby preventing collapse.

Hygroscopicity: Many fast-dissolving dosage forms are susceptible to loss of physical integrity under standard conditions of temperature and humidity because of their hygroscopic nature. Consequently, specialized product packaging is required to safeguard them from moisture.

Good Packaging Design: During the initial stages, it is essential to enhance packaging design to shield Orodispersible Tablets (ODTs) from environmental factors, particularly moisture.

Various Techniques Used in Preparation of Orodispersible Tablets

Various Techniques Used in Preparation of Orodispersible Tablets Various technologies used in the manufacture of orodispersible tablets consist of:

- Direct compression
- Sublimation
- Freeze-drying or lyophilization
- Tablet Molding
- Spray drying
- Cotton candy process
- Mass extrusion
- Phase transition
- Nanonization
- Fast dissolving films

Direct compression

Direct compression represents the simplest and most economical technique for tablet manufacturing. With the availability of advanced excipients, particularly super disintegrants and sugar-based excipients, this method has become feasible for developing orally disintegrating tablets (ODTs). Unlike wet granulation, direct compression does not require extensive pretreatment, making it a preferred option. However, not all drugs are suitable for direct compression into tablets of consistent quality.[14] The addition of disintegrants enhances this method's cost-effectiveness and facilitates its implementation on an industrial scale.[15]

Sublimation method

The reduced dissolution rate observed in compressed tablets, even with highly water-soluble ingredients, is attributed to their low porosity [23]. To address this issue, volatile material is extracted through sublimation separation, resulting in the formation of a highly porous matrix. Tablets produced using this approach typically disintegrate within 10-20 seconds. Additionally, solvents such as cyclohexane and benzene can serve as pore-forming agents.[16]

Tablet molding

The primary constituents of molded tablets typically consist of water-soluble ingredients. The process involves moistening a powder mixture with a solvent, typically ethanol or water, and then molding the mixture into tablets under lower pressures compared to conventional tablet compression, known as compression molding. Subsequently, the solvent is removed through air drying. Molded tablets, being compressed at lower pressures, tend to have a higher porous structure, which aids in enhancing dissolution rates. To further enhance dissolution, the powder blend is often passed through a very fine screen.

Additionally, molded forms can now be prepared directly from a molten matrix where the drug is dissolved or dispersed (referred to as heat molding), or by evaporating the solvent from a drug solution or suspension under ambient pressure (known as novacuum lyophilization).[17]

Spray drying

Spray drying is a technique employed to produce highly porous, fine powders. It's extensively utilized in the pharmaceutical industry to create such powders. Allen et al. have applied this method to manufacture fast-dissolving tablets[19].

The primary objective of drying is to achieve dry particles with desired characteristics. Orally disintegrating tablets typically consist of hydrolyzed or unhydrolyzed gelatin serving as a supporting agent for the matrix, mannitol as a bulk agent, and sodium starch glycolate and croscarmellose sodium as disintegrating agents. Sometimes, citric acid and sodium bicarbonate are added to enhance disintegration and dissolution. Subsequently, the formulation undergoes spray drying in a spray drier. Orally disintegrating tablets produced through this method disintegrate in less than 20 seconds[20]. Notably, tablets formulated with Kollidon CL as the excipient base via spray drying exhibited maximum drug release and minimal disintegration time compared to tablets prepared by direct compression, underscoring the superiority of the spray-dried excipient base technique over direct compression[18].

Freeze-drying or lyophilization

Freeze drying, also known as lyophilization, is a process where water is removed from the product after freezing through sublimation. Freeze-dried methods facilitate faster dissolution compared to other solid products[21].The lyophilization process imparts a smooth amorphous structure to the bulking agent and sometimes to the drug itself, thereby enhancing the dissolution properties of the formulation[22].

Melt granulation technique

The melt granulation technique is a process wherein pharmaceutical powders are efficiently agglomerated using a meltable binder. This technique offers the advantage over conventional granulation methods in that it requires no water or organic solvents. High shear mixers are employed for this process, wherein the product temperature is elevated above the melting point of the binder either by a heating jacket or by the heat of friction generated by impeller blades. To prepare fast-dissolving tablets (FDT) with adequate mechanical strength, a hydrophilic waxy binder such as Superpolystate© (PEG-6-stearate) is utilized. Superpolystate© is a waxy material with a melting point ranging from 33 to 37°C and an HLB value of 9. It serves not only as a binder to enhance tablet physical resistance but also aids in tablet disintegration as it melts in the mouth and rapidly dissolves, leaving no residue[23].

Cotton candy process

This process involves the creation of a polysaccharide matrix through the simultaneous actions of flash melting and spinning.[24] Following this, the matrix undergoes curing or partial recrystallization to yield a compound with favourable flow properties and compressibility. The resulting candyfloss can be further processed by milling and blending with active ingredients and other excipients before being compressed into orally disintegrating tablets (ODT). However, the high processing temperature restricts the application of this technology to thermostable compounds exclusively.

Mass extrusion

This process entails softening the active blend with a solvent mixture containing water-soluble polyethylene glycol and methanol. The softened mass is then extruded or expelled through a syringe to form a cylindrical product, which is subsequently divided into uniform segments using a heated blade to create tablets.[25]

Phase transition

An innovative approach to achieve adequate hardness in orally disintegrating tablets (ODTs) involves leveraging the phase transition of sugar alcohol. In this method, ODTs are created by compressing tablets containing two sugar alcohols, one with a high melting point and the other with a low melting point. Subsequent heating enhances particle bonding, resulting in tablets with sufficient hardness that was previously lacking due to low or inadequate compatibility.[26]

Nanonization

A newly developed Nanomelt technology involves reducing the particle size of drugs to the nanoscale through proprietary wet-milling techniques. The resulting nanocrystals of the drug are stabilized against agglomeration by surface adsorption on specific stabilizers, which are then integrated into orally disintegrating tablets (ODTs). This approach is particularly advantageous for poorly water-soluble drugs. Additional benefits of this technology include rapid disintegration/dissolution of nanoparticles, leading to enhanced absorption and higher bioavailability, as well as reduced dosage

requirements and cost-effective manufacturing processes. Furthermore, it allows for conventional packaging due to exceptional durability and offers a wide range of doses, up to 200 mg of drug per unit.[27]

Fast dissolving films

It comprises a non-aqueous solution containing water-soluble film-forming polymers such as pullulan, carboxymethyl cellulose, hydroxypropyl methylcellulose, hydroxyethylcellulose, hydroxypropyl cellulose, polyvinyl pyrrolidone, polyvinyl alcohol, or sodium alginate. Additionally, it contains a drug and another taste-masking agent, which work together to form a film as the solvent evaporates. For bitter-tasting drugs, resin adsorbate or coated microparticles of the drug can be utilized in the film[28]. These films are characterized by their thinness, typically measuring 2×2 inches, and their rapid dissolution within 5 seconds.

EVALUATION OF ORODISPERSIBLE TABLETS

General Appearance:

The general appearance of a orodispersible tablet is very important i.e its visual identity, presence or absence of colour, size and shape, surface texture, consistency and overall elegance is essential for the patient acceptance [29].

Content uniformity

Assessing content uniformity involves examining the individual content of drug substances in various dosage units to ensure they fall within specified limits. This test is necessary for tablets containing less than 25 mg or less than 25% of the total tablet. To conduct the test, the active ingredient's content is measured in 10 randomly selected dosage units using the assay method. Compliance with the test is achieved if the individual content ranges between 85% and 115% of the average content[30].

Uniformity of Weight:

20 tablets were taken individually and their weight is calculated by weighing on digital balance and average weight of 1 tablet is calculated from the total weight [29].

Friability:

It is the ability of the tablet to withstand the mechanical shocks while handling, packaging and transporting. Hardness is determined by Roche Friabilator which is used for measuring the friability of tablets and expressed in percentage. Initially 10 tablets were weighed, placed in friabilator and operated at 25rpm for 4minutes, then tablets were again weighed which is final. The measure of friability is loss in tablet weight due to abrasion [31].

Hardness:

In order to break the tablet, force is applied across the diameter of the tablet[32]. From each formulation 10 tablets are selected and hardness is determined by Pfizer hardness tester. Tablet is placed over hardness tester to measure the required load to crush the tablet. For ODTs mechanical strength is kept below conventional tablet because disintegration delays with increase in hardness [33].

Wetting Time and Water Absorption Ratio:

For identifying wetting time, tissue paper is double folded and kept in petridish which contains 6ml of water. By placing tablet over the tissue paper wetting time is calculated. For water absorption ratio the wetted tablet is weighed and the amount of water absorption is determined by the following equation [34].

Water Absorption Ratio R = 10 X Wa/Wb

Where;

Wa = Weight of tablet after water absorption

Wb = Weight of tablet before water absorption

Finess of Dispersion:

In this test 2 tablets are kept in 100ml water which is stirred gently for complete disintegration. If complete dispersion passes through a sieve screen with mesh aperture of 110nm without leaving any residue on mesh, then the formulation considered to form a finer dispersion [35].

Tablet Porosity:

Penetration porosimeter is used to measure the tablet porosity [36].

Moisture-uptake studies

This investigation holds particular significance for orodispersible tablets. Its purpose is to evaluate the tablets' stability. Ten tablets were placed in desiccators containing calcium chloride and maintained at 37°C for 24 hours. Subsequently, the tablets were weighed and exposed to 75% relative humidity at room temperature for two weeks[37]. The desired humidity level was achieved by placing a saturated sodium chloride solution at the base of the desiccators for three days. A control tablet (without super disintegrant) was included to gauge moisture uptake from other excipients. The tablets were then weighed, and the percentage increase in weight was recorded.

Disintegration test

Numerous reports indicate that traditional disintegration test apparatuses may provide inaccurate values for the disintegration test of orally disintegrating tablets (ODTs). This is because the amount of saliva present in the oral cavity is very limited (less than 6 ml), while conventional disintegration test apparatuses use a significant amount of water with rapid and vigorous kinetic motion. To address this issue simply, a solution was devised: 6 ml of phosphate buffer with a pH of 6.8

was poured into a 25 ml measuring cylinder, and the temperature was maintained at 37± 2°C. An ODT was then placed into the solution, and the time taken for complete tablet disintegration was recorded[38].

Dissolution test

This test holds significant importance as it enables the determination of the drug-release profile. Both the USP dissolution test apparatuses can be employed for this purpose. Orodispersible tablets exhibit rapid dissolution rates; hence, the USP 2 paddle-type apparatus operating at 50-100 revolutions per minute (r/minutes) is typically utilized for dissolution testing. Although USP Type I basket apparatuses have applications in the evaluation of orodispersible tablets, there are limitations. Tablet fragments or disintegrated masses may accumulate on the inside top of the basket near the spindle, leading to an inaccurate dissolution profile with inadequate stirring. Consequently, Type II apparatuses are preferred due to their ability to provide reproducible dissolution profiles[39].

Manufacturing process of ODT'S[40]

The manufacturing process of Orodispersible tablets involves several steps to ensure the proper formulation and compression of the tablets. Here's a detail of each step:

1. **Geometric Mixing of Drug and Excipients:** Initially, the drug is geometrically mixed with microcrystalline cellulose and lactose. This mixture is then sifted through sieve no. 40 to ensure uniform particle size distribution.
2. **Further Mixing with Starch and Ferric Oxide Yellow:** The blend obtained from step 1 is further mixed with starch and ferric oxide yellow in a rapid mixer granulator. This process helps in homogenizing the mixture and ensures uniform distribution of ingredients.
3. **Preparation of Binder Solution:** A binder solution is prepared by dissolving hydroxypropyl methylcellulose in purified water under stirring. This binder solution acts as a binding agent to hold the ingredients together during compression.
4. **Addition of Binder Solution:** The binder solution prepared in step 3 is added to the mixture in the rapid mixer granulator. This step facilitates the binding of the granules, forming a cohesive mass suitable for tablet compression.
5. **Air Drying and Further Drying:** The granular mass obtained from step 4 is air-dried for 5 to 10 minutes and then further dried at a temperature range of 45°C to 55°C for an additional 5 to 10 minutes. This drying process helps in removing excess moisture from the granules, ensuring proper flow properties.
6. **Sifting of Dry Granules:** The dried granules are then sifted through sieve no. 10 to remove any oversized particles or aggregates. This step ensures uniformity in particle size and facilitates the subsequent compression process.
7. **Mixing with Lubricants:** In a clean and dry blender, the dried granules obtained from step 6 are mixed with hydroxypropyl methylcellulose and magnesium stearate. These lubricants aid in improving the flow properties of the granules and prevent sticking during compression.
8. **Compression of Tablets:** The lubricated granules are then compressed into tablets using a tableting machine. The compression process applies pressure to the granules, forming them into the desired tablet shape and size.
9. **Coating of Tablets:** Finally, the compressed tablets are coated with a coating pan. This coating process helps in enhancing the appearance, stability, and swallowability of the tablets, as well as masking any unpleasant taste or odor.

Overall, this detailed manufacturing process ensures the production of Orodispersible tablets with uniform drug content, proper hardness, rapid disintegration, and enhanced patient acceptability. Each step is carefully executed to maintain the quality and efficacy of the final product.

PACKAGING

Packaging requires special care during manufacturing and storage in order to protect dosage form. By selecting rigid and multilayer foil-based barrier material, moisture and physical issues can be solved. In ODT usage of regular push through blister packaging breaks the tablet so peelable closure packaging is used and specialized packaging equipment is used for blister packaging. Finally packed ODT dosage form is evaluated by immersing the blister in water for a specified period of time which is vacuumed and by opening the blisters manually presence of water droplets is checked [34, 09].

FUTURE PROSPECTS FOR ORODISPERSIBLE TABLETS

These dosage forms offer a promising solution for orally delivering drugs like protein and peptide-based therapeutics, which often exhibit limited bioavailability when administered through conventional tablets. These substances typically degrade quickly in the stomach. As the next generation of drugs leans towards being peptide-based or predominantly protein, tablets may no longer be the primary format for dosing such compounds. Injections are generally not preferred by patients, unless facilitated by user-friendly devices

like twist autoinjectors. Inhalation represents another viable approach for delivering these drugs, but current research in biopharmaceuticals has predominantly focused on chemical units with low molecular weights. The advancement of enhanced oral protein delivery technology through orally disintegrating tablets (ODTs) is particularly promising for delivering high molecular weight proteins and peptides.

DECLARATION OF CONFLICTS INTEREST

The authors report no conflicts of interest.

CONCLUSION:

The popularity of orally disintegrating tablets (ODTs) has significantly surged in the past decade. Based on the literature reviewed, it can be inferred that ODTs offer notable advantages, particularly for paediatric, geriatric, bedridden, and psychotic patients suffering from dysphagia. These tablets swiftly dissolve into a suspension upon contact with saliva in the oral cavity, resulting in rapid onset of action, improved bioavailability, enhanced patient acceptance, and heightened safety compared to conventional oral dosage forms. Presently, ODTs are readily accessible as over-the-counter products for managing allergies, colds, and flu symptoms. The comprehensive information gathered on ODTs provides a solid scientific foundation. With ongoing research and the development of novel pharmaceutical excipients, one can anticipate the emergence of innovative technologies for even more advanced orodispersible tablets in the future.

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