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# Review on Orally Dispersible Tablet

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**ABSTRACT**

The oral route is most applicable by all but in case of bioavailability it gets differentiated by the capsule, tablet, gels, liquids. Orally dispersible tablet is the game changing dosage form because it gives same therapeutic and clinical effect with less time with benefits of liquids. It has no stability issue, no expensive technology like liquids. Orally dispersible tablet brought advantages over the liquids regarding manufacturing, packaging. The patient with traveling, bedridden or suffering from dypsia or for good compliance in case of children's this all parameter make orally dispersible tablet dosage form special.

Key words: Dypsia, Bioavailability, Clinical effects, oral route

## Introduction

Up to 50–60% of all dosage forms are administered by oral methods, which are well accepted. Solid dose forms are preferred because they are simple to administer, precise in their amount, allow for self-medication, reduce pain, and, most significantly, increase patient compliance. Tablets and capsules are the most widely used solid dose forms; yet, for some individuals, these dosage forms are challenging to swallow. Drinking water is crucial for helping people with motion sickness (kinetosis) and abrupt coughing fits brought on by the common cold, allergies, or bronchitis take oral dosage forms. These factors have led to a lot of interest in tablets that can quickly dissolve or disintegrate in the oral cavity. Or dispersible tablets are recommended for a variety of uses. [1,2,3]

### *Advantages 4*

1. ODT can be administered to patients who are unable to swallow tablets or caps, such as the elderly, people who have had strokes, patients who are bedridden, patients who have esophageal problems, and patients who are resistant to swallowing, such as children, geriatric patients, and patients who are suffering from mental health issues. This increases patient compliance.
2. It includes research that found improved bioavailability and shown quick drug absorption through saliva-induced pregastric absorption of medicines from the mouth, pharynx, and oesophagus.
3. For those who frequently lack access to water, such as the disabled, bedridden patients, travellers, and busy persons, ODT is the most practical option.
4. ODT's pleasant mouth feel contributes to a change in how people see the drug
5. As a harsh tablet, especially in patients who are children. By avoiding physical obstructions during oral administration of conventional formulations, the risk of choking or suffocation is reduced, improving safety.
6. The new business opportunities that ODT has produced include product diversification, product promotion, patent extension, and life cycle management, to name just a few.
7. New business opportunities include life style management, product diversification, product promotion, and patent extension.
8. Give solid preparations the benefits of liquid medications.
9. Pharmacological therapy intervention done quick

### *Disadvantages 5,6*

- Since mouth dissolving tablets are hygroscopic by nature, they must be kept in a dry environment.
- At times, it has a mouth-like sensation.

***Taste masking method 7,8***

1) Most of the drugs have an unpleasant taste. ODT formulations must employ skilful taste masking to cover up their bitter flavour. Taste masking employs the following techniques.
2) Simple wet granulation techniques or other excipients being roller compacted to envelop the drug, spray drying can also be used.
3) Drugs can be twice or three times sifted through a fine mesh with excipients like sweeteners and flavours.
4) The drug particles are directly coated.
5) Granulating the drug with a few excipients and coating it with a polymer.
6) Direct blending of bulk drug substance into a matrix that quickly disintegrates is simple if the medication is tasteless or very low dose.
7) Spheronization-assisted extrusion pellet formation.
8) Coacervation to create a drug that is microencapsulated inside a polymer.
9) Cyclodextrins can be used to trap or complex, and they aid in the solubilization of many medications.
10) Drug complexations with resinates have no taste and are insoluble in the mouth.

## Manufacturing methods for orally dispersible tablet

- **Freeze – drying** [9,10,11]

a procedure that involves freezing a substance and then removing water through sublimation. It is possible to dry biologicals and medicines that are sensitive to heat at low temperatures using a process called lyophilization, which also enables the sublimation of water. Preparations produced by lyophilization are very porous, have a very high specific surface area, dissolve quickly, and exhibit increased absorption and bioavailability. The oral pharmaceutical preparation developed by Jaccard and Leyder using lyophilization not only dissolves quickly but also increases the bioavailability of various medications, including spironolactone and trolendomycin. By employing hydrochlorothiazide as a model medicine and the basis for which US Patent 6,010,719 was obtained, Corveleyn and Remon investigated various formulation and process characteristics. The delicate and brittle nature of lyophilized tablets.

- **Tablet moulding** [9,12,13]

Solid dispersion is what a tablet made by moulding is. Because the dispersion matrix in moulded tablets is frequently constructed of water-soluble carbohydrates, they dissolve more quickly and have better flavour. Most of the time, the mouth's mucosal lining is where the active substance is absorbed. When making tablets, the powder mixture is first moistened with a hydroalcoholic solvent before being pressed onto mould plates to create a wetted mass (compressing molding). The solvent is subsequently eliminated by air drying. This means that the procedure is comparable to that used to make tablet triturates. As opposed to compressed tablets, these tablets have a porous structure that speeds up dissolution. They are also less compact. Another method for creating moulded shapes is called heat moulding, which entails establishing the molten material that will become the form.

- **Spray drying** [14,15,16]

The production of extremely porous powders requires the constant usage of dryers in the pharmaceutical sector. Fast-dissolving tablet manufacture was reportedly carried out using this method, The formulations that were created included mannitol as a bulking agent, sodium starch glycolate or crosscarmellose as a disintegrant, and hydrolyzed and unhydrolyzed gelatine as a support agent for the matrix. By adding an acid (like citric acid) or an alkali, disintegration and dissolution were increased even further (e.g., sodium bicarbonate). The mixture was spray-dried to produce a porous powder. Tablets made from this powder fell apart in an aqueous media in less than 20 seconds.

- **Sublimation** [17,18, 19]

The presence of a porous structure in the tablet matrix is essential for mouth-dissolving tablets to dissolve quickly. Because of the matrix's limited porosity, conventional compressed tablets with components that are highly water soluble frequently disintegrate quickly. These ingredients included ammonium bicarbonate, ammonium carbonate, benzoic acid, camphor, hexamethonium tetramine, naphthalene, phthalic anhydride, urea, and urethane. A porous matrix was left behind after the volatile material was sublimated out of it. solvents like cyclohexane and additionally proposed for the creation of matrix porosity were cyclohexane and benzene. Using sublimation technology, Koizumi et al. 26 created tablets that dissolve quickly in saliva. Camphor was utilised as a sublimating agent, while mannitol was used as a matrix forming. The pills disintegrated in 10–20 seconds and had acceptable handling characteristics. Water was used as the pore-forming substance in a process described by Makino et al. a compound containing both a medication and a carbohydrate (e.g. erythritol, glucose, sucrose, xylitol). After the water was taken out, extremely porous tablets with a good mechanical strength and quick dissolving were produced.

- **Direct compression** [14,15,20]

It is the simplest method for making tablets. Direct compression uses standard machinery, readily accessible excipients, and a minimal number of processing stages. Additionally, large dosages may be handled, and the final tablet weight can often surpass that of conventional manufacturing processes. Due to the availability of better tablet excipients, particularly tablet disintegrants and sugar-based excipients, this approach may now be used with fast-

dissolving tablets. Faster tablet disintegration is achieved by adding disintegrants to fast-dissolving tablets, which enhances dissolution. The disintegrants primarily impact the rate of disintegration and thus the dissolve in several direct compression-based rapid dissolving tablet technologies. The development of superdisintegrants and a deeper comprehension of their characteristics have enhanced the acceptance of this approach. Tablet

- **Mass extrusion** [21]

The active blend is softened using a solvent combination of methanol and water-soluble polyethylene glycol, and the softened mass is then ejected through an extruder or syringe to divide a cylinder of the product into even segments so that heated blades may make tablets. The dried cylinder can also be used to coat bitter-tasting medication granules, making them taste even more bitter.

**Patented technologies for fast dissolving tablets are addressing many pharmaceutical companies to enhance the life cycle management to convenient dosing for geriatrics and peadiatrics. Various technologies of fast dissolving tablets are follows**

- **Durasolv** [22]

Ciba created the DuraSolv technology to provide tablets that are more durable for use in bottles or blister packaging. Filler and lubricant are the main components in this composition. The filler's particle size should ideally range from 20 to 65 micrometres. The advantage of fillers like dextrose, mannitol, sorbitol, lactose, and sucrose is that they dissolve quickly and don't have as much gritty texture. The tablets' 2% friability rate is considered to be low. Less than a minute passes before disintegration occurs. It is also possible to extend the lubricant blending times to 10 to 25 minutes or more. Utilizing conventional tableting techniques, conventional packaging technology, and the direct compression method, this method can create tablets. As a result, the production cost is drastically decreased.

- **Zydis** [23]

The first newly advertised tablet technology is this one. In this, the medicine is created by lyophilizing or freeze-drying it in a gelatin matrix. The resulting product is made in blister packs and is very lightweight. Additionally, it uses microencapsulation to hide the drug's harsh taste by employing specific polymers and resins. Comparing this technology to other regular tablets, it claims to have a higher bioavailability. Convenience is the key benefit of this technology, and the biggest drawback is the production cost of the freeze-drying process. After opening, Zydis formulation must be used within six months.

- **Orosolv** [24]

CIMA Labs is filing a patent for this technique. To create the quickly dissolving tablets, effervescent disintegrating agents are used, which are crushed at low pressure. A positive organoleptic quality is the fizzing feeling that results from the tablet's carbon dioxide evolution. The typical effervescent mixture concentration used is 20–25% of tablet weight.

- **Flash dose** [25]

The Flash Dose technique makes use of a special spinning motor to create a crystal structure that resembles floss or cotton candy. This crystalline sugar can then be compacted into a tablet after incorporating the medication. Shear form is the name of the process that Fuisz had patented. A large surface area for dissolution exists on the finished product that is being made. Once on the tongue, it dissolves and disperses immediately. The self-binding shear form matrix referred to as the Flash dosage tablets.

- **Flash tab** [26]

Another fast-dissolving/fast-disintegrating tablet formulation is the Flashtab technology. The Flashtab technology has a patent from Prographarm labs. In this formulation, coated medication particles are combined with a dissolving agent and a swelling agent to create a tablet that dissolves in the mouth in under a minute.

- **Wow** [27]

Using standard granulation and tableting methods, WOWTAB technology uses a combination of low- and high-moldability saccharides to create fast-dissolving tablets. Lactose, mannitol, glucose, sucrose, and xylitol are examples of common low-moldability saccharides, whereas maltose, sorbitol, and oligosaccharides are examples of common high-moldability saccharides. When a saccharide with low and high moldability is compressed to make tablets, the necessary qualities of sufficient hardness and rapid disintegration in the mouth cannot be obtained at the same time. Additionally, if saccharides with different moldabilities are physically combined together prior to tableting, it is impossible to achieve rapid disintegration and oral dissolution. Due to this, a binder made of a high-moldability saccharide was used to granulate a saccharide with poor moldability.

- **QuickSolve** [27]

Quicksolv (Janssen Pharmaceutica, Beese, Belgium) (Janssen Pharmaceutica, Beese, Belgium). The matrix components are dissolved in the solvent (often water) in the Quicksolv formulation before the solution is frozen. The first solvent will remain solid at this temperature, and the frozen solution will then come into contact with the second solvent, which is often acetone, ethanol, or menthol. After a few hours of the first solvent interacting with the second solvent, an useful matrix is produced. The finished product nearly quickly disintegrates. This approach, which has consistent porosity and sufficient strength for handling, is said to avoid or minimise the occurrence of cracking during the final preparation

- **Lyoc** [24]

While Lyoc also uses freeze drying, it differs from Zydis in that the product is frozen on the shelves of the freeze drier. These formulations also call for a significant amount of an inert filler that cannot be dissolved, such as mannitol, to improve the viscosity of the in-process suspension in order to avoid homogeneity by sedimentation during this process. The increased filler content results in denser tablets with disintegration rates that are equivalent to those of loosely compressed quick melt formulations by reducing the possible porosity of the dried dosage form.

- **Pharmabrust** [28]

SPI pharma is filing for a patent on the Pharmaburst technology. The dry mixture of a medicine, flavouring, and lubrication is compressed into tablets using this method, and the pills dissolve after 30 to 40 seconds. This process produces strong enough tablets that can be packaged in blister packs and bottles.

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