Review Article
CODEN (USA): IJPLCP

ISSN: 0976-7126
Tyagi, 11(6):6650-6654, 2020

International Journal of Pharmacy & Life Sciences
Open Access to Researcher

A Review on Mouth Dissolving Tablets

Prem Shankar Tyagi

Advance Institute of Biotech and Paramedical Science, Kanpur, (U.P.) - India

Article info

Received: 10/04/2020

Revised: 28/05/2020

Accepted: 28/06/2020

© IJPLS

www.ijplsjournal.com

Abstract

The popularity and usefulness of the formulation resulted in development of several FDT technologies Oral dosage form and oral route are the most preferred route of administration , Fast dissolving tablets are designed to dissolve in saliva remarkably faster, within a couple of of seconds (less than 60 seconds), and people are compliance with fast-dissolving tablets. The concept of fast dissolving tablet came into existence in late 1970 and further improvements are still happening in reference to its preparation and methodology. Fast dissolving tablets have faster disintegration and dissolution rate and releases within 30 seconds as they are available in touch with saliva. These systems also obviate the need of carry water during drug administration.

Keywords: Fast dissolving tablets, Route of Administration, Disintegration, Dissolution

Introduction

The oral route remains the favored route for administration of therapeutic agents thanks to accurate dosage, low cost therapy, self medication, non invasive method and straightforward administration leading to high level of patient compliance. Pediatric patients may suffer from ingestion problems as a result of underdeveloped muscular and nervous control. Moreover, patients traveling with little or no access to water, limit utility of orally administered conventional tablets or capsules[1, 2, 3]

Solid dosage forms are popular due to simple administration, accurate dosage, self-medication, pain avoidance and most significantly the patient compliance. The most popular solid dosage forms are being tablets and capsules; one important drawback of this dosage forms for a few patients is that the difficulty to swallow. Drinking water plays a crucial role within the swallowing of oral dosage forms. It is difficult to engulf tablet when water isn't available, within the case of the kinetosis (kinetosis) and sudden episodes of coughing during the common cold, allergic condition and bronchitis. For these reason, tablets which will rapidly dissolve or disintegrate within the mouth have attracted an excellent deal of attention [2]

Pharmacokinetics

It deals with absorption, distribution, metabolism, excretion. After absorption drug attains therapeutic level and elicit pharmacological effect. so both rate and extent of absorption is important. In conventional dosage form there is delay in disintegration and dissolution. But in case of fast dissolving tablets rapidly disintegration in oral cavity and dissolution is fast. The faster dissolution of tablet takes place in mouth absorption from mouth, pharynx, and esophagus.

***Corresponding Author**
E.mail: premtyagi44@yahoo.com

Some factors like age, sex, pH, blood flow through gastrointestinal taken into consideration because elders may be considered as separate unique medical care preparation. In geriatric patients, decrease in body mass and total body water result in decreased volume of distribution of lipid soluble drugs. Duration and intensity of action depends upon rate of drug removal from body i. e. biotransformation. Decrease in renal volume, regional blood flow to liver reduces bio transformation of drug through oxidation, reduction, and hydrolysis. Excretion by renal clearance is slowed, thus half lifetime of renal excreted drugs increase. The metabolism of fast dissolving tablets is extremely easy and may be obtained very faster. Drinking water plays an important role in swallowing of oral dosage forms.

Pharmacodynamics

Drug reception interaction impaired in elderly also as in young adult due to undue development of organ. Decreased ability of body to respond reflexive stimuli, cardiac output, and orthostatic hypotension may see in taking anti hypertensive like prazosin. Decreased sensitivity of CVS to beta adrenergic agonist and antagonist .Immunity is a smaller amount and brought into consideration while administered antibiotics. Altered response to drug therapy-elderly show diminished bronchodilator effect of theophylline shows increased sensitivity to barbiturates. Concomitant illness is often present in elderly, which is also taken into consideration while multiple drug therapy prescribed.

Advantages of fast dissolving tablets[4,5]

Ease of administration and Patients compliance These tablets are easy to administer in case of patients who cannot swallow (Bedridden patients, stroke victims, and elder patients), who should not swallow (like renal failure) and who refuse to swallow (Paediatrics, geriatric and psychiatric patients). These tablets offer patients compliance in case of bedridden disabled patients and for peoples who are busy or travelling as water is not required for administration. Rapid onset of action These tablets are having rapid onset of action as these tablets are getting absorbed through pre-gastric area.

 Enhanced bioavailability Bioavailability of poorly soluble drugs increases by adding hydrophilic disintegrating agents which results in rapid disintegration and dissolution. Due to pre gastric absorption, these tablets bypass the primary pass metabolism which ends up in reduced dose, less side effect and enhanced bioavailability.

 Fast dissolving tablets are palatable Property of getting good feel, it's more accepted among paediatrics patients, because it improves the taste of bitter drugs.

 Good alternative to standard tablet and liquid dosage forms Mouth dissolving tablets are solid unit dosage forms having accurate dosing, having no risk of choking and suffocation with advantages of both solid and liquid dosage forms

Limitations of ODTs

It includes

• The tablets commonly have insufficient mechanical strength. Hence, conscientious handling is necessary.

• The tablets may leave an unpalatable taste and grittiness within the mouth if not formulated properly.

• Patients who simultaneously take anticholinergic drugs are not suitable candidates for ODTs.

Excipients commonly used for FDTs preparation

Mainly seen excipients in FDT are as follows a minimum of one disintegrant, diluent, lubricant, and swelling agent, permeabilizing agent, sweeteners, and flavoring

Mechanism of fast dissolving tablets

To achieve the tablets fast dissolving properties, water cause rapid disintegration and instantaneous dissolution of the tablet. Incorporation of an appropriate disintegration agent or highly water soluble excipients within the tablet formulation These are some under mentioned mechanisms by which the tablet is broken suspension of drug.

Techniques in preparation of FDTs

Freeze drying

Lyophilization means drying at coldness under condition that involves the removal of water by sublimation. Drug during a water soluble matrix which is then freeze dried to offer highly porous structure. The drug is entrapped in a water soluble matrix which is freeze dried to produce a unit which rapidly disperses when placed in a mouth.

Advantages

 Lyophilization is useful for heat sensitive drugs.

 Tablets obtained by this system dissolve sooner than the other solid dosage forms because it will form an amorphous porous structure.

 Because it melts fast, provides good mouth feel.

 Improved absorption and increased bioavailability

Disadvantages

 Expensive and time consuming process

 Required special packaging as obtained tablets are poorly stable and fragile.

Molding

In this method, molded tablets are prepared by using water-soluble ingredients in order that the tablets dissolve completely and rapidly.Compression molding and heat molding are the two types of molding technique.

Mass extrusion

The dried cylinder can also be used to coat granules for bitter drugs and their by achieve taste masking.In this technique, a blend of active drug and other ingredients is softened using solvent mixture of water soluble polyethylene glycol, using methanol and then softened mass is extruded through the extruder or syringe to urge a cylinder of product, which is finally dig even segments with the assistance of heated blades to get tablets. The dried cylinder can be used to coat the granules of bitter tasting drugs and thereby masked their bitter taste[8, 9] .Expulsion of softened mass through the extruder or syringe is carried out, to get a cylinder of the product which is then cut into even segments using a heated blade to form tablets [10, 11]

Direct Compression

Direct compression represents the foremost cost effective and simplest tablet manufacturing technique.

Evaluation of fast dissolving tablets [10,11]

Organoleptic properties: The size and shape of the tablet can be dimensionally described, monitored and controlled.Ten tablets were taken and their thickness was recorded using vernier caliper.

Hardness: A big strength of ODT is difficult to realize thanks to the specialized processes and ingredients utilized in the manufacturing. The limit of hardness for the ODT is typically kept during a lower range to facilitate early disintegration within the mouth. The hardness of the tablet could also be measured using conventional hardness testers.

Friability: To realize % friability within limits for an ODT may be a challenge for a formulator since all methods of producing of ODT are liable for increasing the half of friability values. Thus, it's necessary that this parameter should be evaluated and therefore the results are within bound limits (0.1-0.9%)

Wetting time: The tactic reported by Yunixia et al., was followed to live tablet wetting time. A piece of tissue (12 cm X 10.75 cm) folded twice was placed during alittle petridish (ID = 6.5 cm) containing 6 ml of Sorenson's buffer pH 6.8. A tablet was placed on the paper, and therefore the time for complete wetting was measured. Three trials for every batch and therefore the variance were also determined.

In-Vivo Disintegration test[8-9]:

The test was carried out on 6 tablets using the apparatus specified in I.P.-1996. Distilled water at 37°C ± 2°C was used as a disintegration media and the time in second is taken for complete disintegration of the tablet with no palatable mass remaining within the apparatus was measured in seconds

Dissolution test: Other media like 0.1 N Hcl, pH 4.5 and pH 6.8 buffers should be used for evaluation of ODT within the same way as their ordinary tablet counterparts. Experience has indicated that USP 2 paddle apparatus is best suited and customary choice for dissolution test of ODT tablets, where a paddle speed of fifty rpm is usually used. Typically the dissolution of ODTs is extremely fast when using USP monograph conditions. Hence slower paddle speeds could also be utilized to get a comparative profile. Large tablets approaching or exceeding one gram and containing relatively dense particles may produce a mound within the dissolution vessel, which can be prevented by using higher paddle speeds. These two situations expand the acceptable range of stirring to 25-75 rpm.[10].

Conclusion

FDTs are dosage forms which are formulated to dissolve/disintegrate rapidly within the saliva generally within few seconds. FDTs offer lot of benefits over conventional dosage forms like

improved efficacy, bioavailability, rapid onset of action, better patient compliance. Particularly FDTs provide more comfort to pediatric and geriatric patients. FDTs can be prepared by several methods based on the drug and additives used. Usually FDTs possess less mechanical strength. But by applying some new technologies and additives FDTs with sufficient mechanical strength can be prepared [11]. The basic fundamental utilized in the event of the fast-dissolving tablet is to maximise its pore structure. Vacuumdrying and freeze-drying techniques are tried by researchers to maximise the pore structure of tablet matrix. Freeze drying is cumbersome and yields a fragile and hygroscopic product. Therefore, a vacuum drying technique was adopted within the present investigation after addition of a subliming agent to extend porosity of the tablets. Even bitter drugs are often incorporated in FDTs by using taste masking agents. The research for FDTs is still going on. FDTs provide wide marketing also which makes the dosage form successful within the market. Many drugs will be formulated as FDTs in future for its market potential [10].

References

1. Garg A, Gupta M, Mouth dissolving tablets: a review. Journal of Drug Delivery and Therapeutics, 2013; 3(2):207-214.
2. Garg A, Gupta M, Taste masking and formulation development & evaluation of mouth dissolving tablets of levocetrizine dihydrochloride. Journal of Drug Delivery and Therapeutics, 2013; 3(3):123-130.
3. Hardenia S., Darwhekar G. Formulation and optimization of fast dissolving tablets of promethazine theoclate using 32 factorial design. Journal of Drug Delivery and Therapeutics, 2017; 7(7):12-14.
4. Panigrahi R, Behera S, Panda C, A Review on Fast Dissolving Tablets, Webmed Central: Review articles, 2011; 1(11):1-15.
5. Singh S, Nautiyal U, Singh R, Kaur S, Fast Dissolving Tablets – Future Aspects, International Journal of Pharmaceutical and Medicinal Research, 2015; 3(2):216-231.
6. Kundu S, Sahoo P. K. Recent Trends In The Developments of Orally Disintegrating Tablet Technology. Pharma Times.2008; 40(4):11-15.
7. Ito, A., Sugihara, M., Development of Oral Dosage forms for elderly patients: Use of agar as Base of rapidly disintegrating oral tablets,Chem Pharm.Bull,1996; 44(11):2132-2136.
8. Wagh M. A, Kothawade P. D, Salunkhe K.S, Chavan N.V, Daga V.R. Techniques used in orally disintegrating drug delivery system. Inter. J. Drug Delivery 2010; 2:98-107.
9. Hirani J.J, Rathod D.A, Vadalia K.R. Orally Disintegrating Tablets: A Review. Trop J Pharm Res. 2009; 8 (2):161-172.
10. Ramjiyani KM, Jethara SI, Patel MR. Fast dissolving tablets: novel approach to drug delivery. World Journal of Pharmaceutical Research 2015;4(3):1197-1215.
11. Jaimini M, Ranga S, Kumar A, Sharma S, Chauhan BS. A review on immediate release drug delivery system by using design of experiment. Journal of Drug Discovery and Therapeutic 2013;1(12):21-27.

Cite this article as:
Tyagi P.S. (2020). A review on Mouth dissolving tablets, *Int. J. of Pharm. & Life Sci.*, 11(6): 6655-6658.
Source of Support: Nil
Conflict of Interest: Not declared
For reprints contact: ijplsjournal@gmail.com