Dispersible Tablet A-Review

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Abstract: There are several route of drug administration in our body. Some of them are most adequate in the route of drug administration. By going through this review we will discuss regarding oral route of drug administration which is most acceptable and satisfactory route of drug administration. Nowadays Dispersible tablet have been most appropriate in dosage form particularly for some exceptional type of patients like mentally ill, bedbound, pediatric, older age. Dispersible tablet can be defined as the tablet having drugs prepared for easily dissolved in mouth with the contact of little water, without water even without water will give optimum drug bioavailability as compared to conventional dosage form. This is the most popular dosage form those face difficulty in taking other form of dosage. In novel drug delivery system research related to formulation concerned with safety, quality and efficacy of existing drug molecules by novel drug delivery system. As per the data there are so many drugs have been successfully manufactured as dispersible tablet and result found satisfactory. Tablet is most popular among all dosage forms existing today because of its self-administration, and easy manufacturing; however in case of hand tremors, dysphasia geriatric patients the problem of swallowing is common which leads to poor patient compliance. To overcome these drawbacks, mouth dissolving tablets or orally disintegrating tablets have emerged as alternative oral dosage form. These tablets disintegrate, dissolve and disperse in saliva within few seconds. In this review any one who want to research can easily acquainted to this novel formulation. Here we can get the review of Dispersible tablet Advantages, Disadvantages character of drugs, formulation process and its evaluated parameters.

Keywords: Dispersible tablet, Solid Dosage Form, Oral solid dosage form, Tablet.

Introduction:
The predictable tablets formulated are broadly administered by a foremost collection of patients but a group of patients such as pediatric, geriatric, bedridden, mentally ill, and incorporated patients find it difficult to swallow the predictable tablet due to their different abnormalities. It was concluded that patients are confronted with these consequences, which results in a high rate of patient noncompliance. The main aim of a researcher behind the development of any new drug administration system is to bring a more convenient and effective form of administration. The oral administration of medication is the most preferred route for the administration of medication, due to its huge application and improved adhesion of patience. The term “dispersible tablet” may be defined as follows: Tablet not covered for buccal cavity, where it disperses before. The dispersible tablet for these specific categories of patients was given oral dispersal pills. Oral dispersal pills. They have many advantages such as difficulties of deglutition better compliance, rapid appearance of increased bioavailability. So preparing of disintegration tablet we need to add superdisintegrant agent. Without addition of super disintegrate we cannot formulate disintegration tablet. Generally the superdisintigrant are used in formulation of Dispersible tablet are cross carmellose, sodium glycolate, poly vinyl pyrrolidone. In formulation of dispersible tablet some of the formulation are as direct compression, spray drying, freeze drying etc.

Properties of Oral Solid Dispersible tablet:

Powder ready for compression containing drug and various excipients is subjected for precompression parameters (micrometric properties) to study the flow properties of granules, to achieve uniformity of tablet weight. Bulk density and tapped density for the blend to be performed. The loose bulk density and tapped bulk density for the entire formulation blend varied respectively. The hardness of the tablets to be prepared as per the parameters. The friability to be found in all designed formulation in the evaluated range. This is the common and easy method and reduced formulation cost.

Features Dispersible tablet:

Ease of Administration to the patient who refuses to swallow a tablet as pediatric geriatric patient and psychiatric patient. Consentience of administration and accurate dosing as compared to liquids. No need of water to swallow the dosage form, which is highly convenient especially for patient who are traveling and do not have immediate access to water. Good fast feel property of FDDS help to change to basic view of medication as better pill particularly for pediatric patient.

Rapid dissolution and absorption of drug, which may produce quick onset of action. Some drugs are absorbed from the out, pharynx and esophagus as the saliva passes down into the too much; in such cases bioavailability of drugs is increased. Ability to provide
advantages of liquid medication in the form of solid form. Pre-gastric absorption can result in improved bioavailability and as a result of reduced dosage, improved clinical performance through a reduction of unwanted effects.

Limitation of Dispersible Tablets:

Dispersible Tablets is hygroscopic in nature so must be kept in dry place. Sometime it possesses mouth feeling. It is also showing the fragile, effervescence granules property. Dispersible Tablets requires special packaging for proper stabilization & safety of stable product.

Formulation process of Dispersible tablets:

During formulation we need to take extra precaution and whole process to be performed as per the evaluated process with care. After formulation it should confirmed the therapeutic effect properly. There few process to formulate Dispersible tablets. Each process have its own advantages and disadvantages. Below is the one technique of formulating Dispersible tablets. Dispersible tablets prepared by direct compression method according to the formula all the ingredients are passed through mesh sieves separately. The drug and microcrystalline cellulose were mixed by small portion each time of both, blending it to get a uniform mixture and kept side. Then the ingredients were weighted and mixed in geometrical order and tablets were compressed of sizes flat type punch to get tablet using Compression Machine.

Mechanism of Dispersible tablet:

This type of dosage forms decay quickly and dissolve to release the drug when they come in contact with the saliva, so there is no need for water during administration, a feature that makes them very suitable for pediatric and geriatric patients. Dispersible tablet formulated for dissolving in mouth quickly without water or a little bit water required. When intake this dispersible tablet it gets swelling when it comes in contact of water they dispersed immediately and break it contents.

Challenging during manufacturing Dispersible Tablet:

Strength of tablet: To maintain mechanical strength is the main important part during manufacturing Dispersible tablet. If mechanical strength will rise then the disintegration time will increase. So maintain strength of Dispersible Tablet is the good manufacturing part. Masking tablet: In case of Dispersible tablet giving a taste masking is big challenge for patience. Dispersible table dissolved in contact of water and dispersed it all ingredients those used during formulation. So masking agent should be used to avoid patience disconformity.

Solubility: It should be good soluble when come in contact of water if any criticality observed in that case mannitol is used to avoid low solubility of dispersible tablet.

Tablet size: For recommendation of all type of patience we need to maintain the size of the tablet in between 8 mm to handle and swallow the Dispersible tablet.

Temperature and RH of environment: Stability study to be performed for this Dispersible Tablet as the water soluble content already present.

Post -compression properties:

- Hardness
- Friability
- Weight variation
- Uniformity of thickness
- Drug content uniformity
- Wetting time
- In-vitro disintegration test
- In-vitro dissolution Test
Hardness Test:

Although hardness test is not an official, tablet should have sufficient handling during packing and transportation. Hardness of tablet was measured using digital hardness tester. It is the pressure requires for fracturing diametrically placed tablets by applying the force. The hardness of 5 tablets from each batch was determined and average of reading in triplicate was calculated, which was expressed in kg/cm².

Friability Test:

Friability of the tablet determined using Roche friabilator. This device subjects the tablet to the combined effect of abrasion and shock in a plastic chamber revolving at 25 rpm and dropping a tablet at height of 6 inches in each revolution. Reweighed sample of tablets placed in the friabilator and subjected to the 100 revolutions. Tablets to be dusted using a soft muslin cloth and reweighed. The friability (F) is given by the formula.

\[ F = \frac{W_{\text{initial}} - W_{\text{final}}}{W_{\text{initial}}} \times 100 \]

% of Friability of tablets less than 1% is considered acceptable.

Weight Variation Test:

With a tablet designed to contain a specific amount of drug in a specific amount of formula, the weight of a tablet being made is routinely measured to ensure that a tablet contains proper amount of drug. Procedure: Weight of 20 tablets to be determined and average weight calculated. Then individual tablets weighed and the individual weight compared with an average weight.

Uniformity of Thickness:

The crown thickness of individual tablet may be measured with a micrometer which permits accurate measurements and provides information on the variation between tablets. Other technique employed in production control involves placing 5 or 10 tablets in holding try, where their total crown thickness can be measured with a sliding caliper scale, the tablet thickness measured using screw gauge.

Drug content uniformity:

The test is applicable for tablets that contain less than 10 mg or less than 10% w/w of active ingredients. The test for uniformity of content should be carried out only after the content of active ingredient in a pooled sample and tablets have been shown within acceptable limits of the started content. Ten tablets to be taken and their content was determined by UV spectrophotometry.

Wetting Time:

The method can be applied to measure tablet wetting time. A piece of tissue paper folded twice to be placed in a small Petri dish containing 10 mL of water to a tablet to be placed on the paper, and the time for complete wetting can be measured three trials for each batch performed and standard deviation can also determine.

Disintegration Time:

The process of breakdown of a tablet into smaller particles is called as disintegration. The invitro disintegration time of a tablet can be determined using disintegration test apparatus as per I.P. specifications. I.P. Specification place one each of the basket. Add a disc to each tube and run the apparatus using distilled water maintained at 37±2°C as the immersion liquid. The assembly should be raised and lowered between 30 cycles per minute in the tablet with no palpable mass remaining in the apparatus can be measured and recorded.

In vitro dissolution studies: Dissolution rate can be studied by using USP type-II apparatus (US XXIII Dissolution Test Apparatus at 50 rpm) using 900 mL of phosphate buffer pH (6.8) as dissolution medium. Temperature of the dissolution medium to be maintained at 37±0.5°C, aliquot of dissolution of filtered can be withdrawn at every 1 min interval and filtered, the absorbance of filtered solution to be measured by UV spectrophotometer method at 276 nm and concentration of the drug determined from standard calibration.
**Conclusion:** The Dispersible Tablet is a novel dosage of solid dosage form where this is much more patient-friendly and need not require any medical technical during consumption of dispersible tablet. This is the formulation which pediatric to older man can be consume. During this review we have furnished the basic concept and the basic procedure during formulation of dispersible tablet. As it is a new addition of solid dosage form and in progressive phase and correction need to be applied to mitigate nonconformance.

**Reference:**


