Available online on 30.08.2019 at http://jddtonline.info

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

Open Access Review Article

Solid Dispersed Fast Dissolving Tablets-More Complaint Dosage Forms

R. Santosh Kumar and G.L.S. Saikumar

GITAM Institute of Pharmacy, GITAM (Deemed To Be University) Rushikonda, Visakhapatnam-530045, Andhra Pradesh, India

ABSTRACT

Fast dissolving tablets are formulated for their easy absorption and improved bioavailability retarded of patients like bedridden, mentally people and geriatric people. The tablets are also called as mouth dissolving tablets as they dissolve when they are placed in mouth. Some of one of the method of preparing the dissolving tablets is formulation of pure drug into solid dispersion which can be further formulated into tablets. It is the easy way to treat the patients in easy manner. Solid dispersion is basically a drug–polymer two-component system; the drug polymer interaction is the determining factor in its design and performance. Different methods are used in manufacturing of these fast dissolving tablets which are melting method solvent method, melting solvent method, melt extrusion method, lyophilisation technique, melt agglomeration Process, Surfactant method, electro spinning and super critical fluid technology. The introduction of fast dissolving dosage forms has solved some of the problems encountered in administration of drugs to the pediatric and elderly patient, which constitutes a large proportion of world's population.

Keywords: Fast dissolving Tablet, Solid dispersion.

Article Info: Received 10 July 2019; Review Completed 16 Aug 2019; Accepted 20 Aug 2019; Available online 30 Aug 2019

Cite this article as:

Santosh Kumar R, Saikumar GLS, Solid Dispersed Fast Dissolving Tablets-More Complaint Dosage Forms, Journal of Drug Delivery and Therapeutics. 2019; 9(4-A):874-876 http://dx.doi.org/10.22270/jddt.v9i4-A.3615

***Address for Correspondence:**

R. Santosh Kumar, GITAM Institute of Pharmacy, GITAM (Deemed to be University), Gandhinagar, Visakhapatnam-530045, Andhra Pradesh, INDIA.

INTRODUCTION:

Tablets are the one of the most important dosage form in the treatment of disease. These are made with porosity. Fast dissolving tablets can be easily administered into the patients like mentally retarded, geriatric, bedridden people they are having a major problem to swallow the tablets with larger sizes. Solid dispersion technique is the major advantage in the formulation of fast dissolving tablet's that help fast disintegration of tablet and it gets soluble in the mouth.

Thus tablets are also helpful in preventing mouth ulcers and toothaches.

Solid dispersion technique helpful in preparation of tablets which having the higher rate of absorption and the rate of extent and this was based on the dissolution rate.

The main reason of increasing the solubility and dissolution rate is as several drugs belongs to BCS class II, which are poorly soluble. In this review main emphasis is given on formulation of solid dispersions of poorly soluble drugs which will be further formulated into fast dissolving tablets to enhance the solubility and bioavailability of poorly soluble drugs.

SOLID DISPERSIONS:

It refers to the group of solid particles containing at least two multiple components, generally hydrophilic matrix and hydrophobic drug , it may be either crystalline or amorphous. When it was exposed to aqueous media the carrier dissolves and the drug releases as colloidal particles, it produces high dissolution rate and bio availability of poorly water soluble drugs[2].

Advantages of solid dispersion [3-5]:

- It reduces the particle size of the product.
- It improves the wettability of the drug.
- Improves the porosity.
- It converts crystalline form into amorphous form.

Disadvantages of solid dispersion [6]:

- The major disadvantage was their instability.
- It difficult in handling as they are more hygroscopic.

Types of solid dispersion [7-10]:

- Solid Eutectic Mixture.
- Solid solution.
- Glass solution and suspension.
- Amorphous precipitation in crystalline carrier.
- Continuous solid solutions.
- Discontinuous solid solutions.

1. Solid Eutectic Mixture:

It consists of two components which agent into liquid state. When combined together through the particle size of the drug gets reduced.

2. Solid solution:

In a solid solution, two components crystallize together in homogeneous one phase system. It is classified as continuous and discontinuous.

3. Glass solution and suspension:

It is a homogenous glassy system, where the solute gets dissolved in glassy system.

4. Amorphous precipitation in crystalline carrier:

In this group of dispersion, drug is precipitated out in amorphous form.

5. Continuous solid solutions:

In this technique they are and carrier miscible in all proportions. It means the bonding strength between two compounds are stronger than the strength between the molecules.

6. Discontinuous solid solutions:

In this case the solubility of each component is limited.

Different methods of solid dispersion are :

1. Fusion method.
2. Hot melt extrusion.
3. Lyophilization technique.
4. Spray freeze drying.
5. Melting solvent method.

1. Fusion method :

In this the molecular dispersion is formed due to the mixing of molecular mobility of the drug and carriers molecules which are having higher melting point.

2. Hot melt extrusion :

In this the drug should be melted at particular temperature above the eutectic point.

3. Lyophilization Technique :

It involves in transfer of heat and mass to and the product under preparation.

4. Spray freeze drying :

The drug is dissolved in given concentration at the ratio of 40/60 in solution which is sprayed by nozzle into liquid nitrogen.

5. Melting Solvent Method :

It involves in the preparation of solid dispersion by dissolving the drug in a suitable liquid.

Definition of fast dissolving tablets:

A fast dissolving drug is a tablet that dissolves in oral cavity on contact with saliva results in solution or suspension of medicine.

Advantages of fast dissolving tablets [11-15]:

- Chewing is not necessary.
- It has improved stability.
- Pleasing mouth feel.
- Easy of administration to patients.
- No need of water to swallow the drug.

Disadvantages of fast dissolving tablets [16-17]:

- They are fragile and brittle.
- Tablets with insufficient strength.
- Drugs with more dosage are difficult in the formulation of fast dissolving tablets.
- Patients with anticholinergic medications may not be suitable for fast dissolving tablet.
- The tablets are hygroscopic in nature so it is kept in dry place.

Conventional techniques for the preparation of fast dissolving tablets [18-21]:

1. Dis integrant addition
2. Freeze drying
3. Moulding
4. Sublimation
5. Spray drying
6. Mass extrusion
7. Direct Compression

1.Disintegrant addition :

This technique is used for formulation of tablets because of its effectiveness. The basic principle by this technique is for formulation of fast dissolving tablet by adding of disintegrants.

2.Freeze drying :

Lyophilization is a pharmaceutical technology which allows drying of sensitive drugs at low temperature.

3.Mouldings :

In this method the tablets are prepared by using water soluble ingredients.

4.Sublimation :

This technique is containing of highly water soluble ingredients due to low porosity of tablets.

5.Spray drying :

It produces highly porous and fine powders that dissolves rapidly. These may be hydrolyzed and non hydrolysed gelatins as agents.

6.Mass Extrusion :

By using methanol in the preparation of tablet it makes the drug softening.

7.Direct compression :

Easiest way of a fast dissolving manufacture tablets by direct compression in which the solid dispersions formulated by using anyone of method of preparation, can be compressed into fast dissolving tablets.

CONCLUSION:

- Fast dissolving tablets are used in effectively treatments of the patients like geriatric and pediatric and mentally absorbed people.
- Solid dispersion technique can be used for enhancing wettability and absorption of poorly soluble drug.
- They dissolve rapidly in saliva without need of water.
- By improving the dissolution rate of highly lipophilic drugs by improving their bioavailability by reducing the particle size with wettability and formation of amorphous particles.

REFERENCES:

1. Hannan PA, Khan JA, Khan A, Safiullah S. Oral dispersible system: a new approach in drug delivery syste. Indian J Pharm Sci 2016; 78:2-7.
2. Patel TS, Sengupta M. Fast dissolving tablet technology. World J Pharm Sci 2017; 2:485-508.
3. Bhowmik D, Chiranjib B, Krishnakanth, Pankaj, Chandira RM. Fast dissolving tablet: an overview. J Chem Pharm Res 2016; 1:163-77.
4. Siddiqui N, Garg G, Sharma PK. Fast dissolving tablets: preparation, characterization and evaluation: an overview. Int J Pharm Sci 2015; 2:87-96.
5. Kumari S, Visht S, Sharma PK, Yadav RK. Fast dissolving drug delivery system: a review article. J Pharm Res 2016; 3:1444-9.
6. Mohanachandran PS, Sindhumol PG, Kiran TS. Superdisintegrants: an overview. Int J Pharm Sci Rev Res 2015; 6:105-9.
7. Deshmukh VN. Mouth dissolving drug delivery system: a review. Int J Pharm Tech Res 2016; 4:412-21.
8. Leunar C, Dreessan J. Improving drug solubility for oral delivary using solid dispersion. Eur J Pharm Biopharm 2014; 50:47-60.
9. Gupta DK, Bajpai M, Chatterjee DP. Fast mouth is dissolving disintegrating tablet and patient counselling points for FDDTSa review. Int J Res Dev Pharm Life Sci 2014; 3:949-58.
10. Nautiyal U, Singh S, Singh R, Gopal, Kakar S. Fast dissolving tablets as a novel boon: a review. J Pharm Chem Biol Sci 2014; 2:5-26.
11. Argade GD, Magar DD, Saudagar RB. Review article on solid dispersion as solubility enhancement technique for poorly water soluble drugs. J Adv Pharm Edu Res 2013; 3:427-39.
12. Singh J, Walia M, Harikumar SL. Formulation and evaluation of fast dissolving tablets of rosuvastatin. J Drug Delivery Ther 2013; 3:148-55.
13. Dixit AK, Singh RP, Singh Stuti. Formulation and evaluation of solid dispersion of amlodipine besylate. Int J Res Pharm Biomed Sci 2015; 3:960-6.
14. Sameer Singh, Raviraj Singh Baghel, Lalit Yadav. A review on solid dispersion. Int J Pharm Life Sci 2016; 2:1078-95.
15. Varun RJ, Venkateshwarlu L, Srikanth L. Combinational products: a regulatory review. Int J Pharm Sci Rev Res 2015; 5:41-51.
16. Chauhan R, Virmani S, Suman P. Quantitative method development and validation of sulfasalazine in tablet dosage form by uv-spectroscopy. Int J Pharm Sci Rev Res 2015; 2:120-9.
17. KV, Raj GB, Ravishanker D, Kumar CA. Preparation and evaluation of montelukast oral dispersible tablets by direct compression method. Int Res J Pharm 2014; 7:315-8.
18. Yang D, Kulkarni R, Behme RJ, Kotiyan PN. Effect of the melt granulation technique on the dissolution characteristics of griseofulvin. Int J Pharm 2015; 329:72-80.
19. Khan AB, Tripuraneni A. Fast dissolving tablets–a novel approach in drug delivery. Rguhs J Pharm Sci 2014; 1:7-16.
20. Chowdary YA, Soumya M, Madhubabu M, Aparna K, Himabindu P. A review on fast dissolving drug delivery systems-A pioneering drug delivery technology. Bull Environ Pharmacol Life Sci 2015; 1:8-20.
21. Abdulraheman ZS, Patel MR, Patel KR. A review on immediate release tablet. Int J Univers Pharm Bio Sci 2016; 3:93-113