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TECHNOLOGICAL BASED OVERVIEW OF FAST DISINTEGRATING TABLETS

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Abstract: Multiversatality and ease of acceptance has become a criterion for the acceptance and rejection of any formulation. In case the formulation is not versatile then its chances of rejection or cementing its place in market remains doubtful. The only thing which could tackle this problem is the chance of modification. Hence the modification and ability to adapt the present position makes the formulation like FDT to cement its place in this uncertain pharmaceutical market.

Keywords: FDT, Market Scenario, Conventional Technologies, Patented Technologies

INTRODUCTION

In the past decades fast disintegrating tablets share the major market in the world because of their advantages of administration and better patient compliance. Now a day's elders and young generation constitutes a major portion of world's population. This portion experiences the major difficulties such as dysphasia (difficulty in swallowing). Some other groups such as disabled, nauseated, asthmatic patients also have difficulties in swallowing a tablets and capsules. To overcome such problems fast disintegrating tablets (FDT) are the better alternative considered today. Table.1 tries to figure out the advantages and disadvantages of FDT and this also helps in predicting why this category has cemented its place. This things and articles with more merits than demerits are easily accepted in market.

Challenges to Development FDT:

1. To achieve rapid disintegration of tablets
2. To minimize residual volume in mouth
3. Provide protection against moisture.

Table.1: Figure out The Advantages and Disadvantages of FDT

S.No.	Merits	Demerits
1	FDT shows good stability	Larger dosages can't be taken as FDT
2	Easy manufacturing and easily handled by patients	FDT cannot provide controlled release effects because of its dispersible nature
3	Shows rapid disintegration time	Sjogren's patients cannot administer FDT due to dryness of mouth
4	Having quick dissolution	---
5	Improved bioavailability	---
6	Rapid onset of action	---

TECHNOLOGIES FOR THE DEVELOPMENT FDT [11-18]:

Direct compression:

Direct compression is a simple and easiest manufacturing step and involves minimum number of processing steps. Now a day's direct compression technique is mainly used for FDT because of improved availability of excipients such as super disintegrants and others.

Disintegrants concentration used at three levels:

1. Critical level
2. Below level.
3. Above level.

In below critical level Disintegration time of tablet is inversely proportional to disintegration concentration. In above Critical level disintegrant and disintegration time remain near about constant.

Freeze drying:

In this process water or moisture is sublimated from the product after by frozen. Drug is dissolved or dispersed in the aqueous solution of carrier.

Then the mixture is poured in wells that perform blister packs. Blister packs are holded by trays are passed through liquid nitrogen freezing tunnel for freezing drug solution. Then frozen blister packs are placed in refrigerated cabinets for continuing freeze drying.

Moulding

Moulding process involves two methods

1. Solvent method.
2. Heat method.

Moulded tablets comprise with water soluble ingredients therefore these tablets dissolved completely and rapidly. Water soluble ingredients used with hydro-alcoholic solvent and is moulded into tablets under lower pressure than used in conventional tablet compression.

Dry granulation:

Dry granulation involves the following stages

1. Mixing and milling of drugs and excipients
2. Roll compaction
3. Milling and screening of slugs and compacted powder
4. Mixing with lubricant and disintegrant
5. Compression of tablet

Sublimation:

Volatile material is compressed into tablets then this material is removed or evaporated by sublimation and left a highly porous structure in the tablet which is responsible for its rapid disintegration. Volatile materials such as urea, camphor ammonium carbonate, ammonium bicarbonate etc are used in sublimation.

Table.2: Figure out Technologies to Develop FDT

S. No.	Conventional technologies	Patented technologies
1.	Freeze drying	Zydis technology
2.	Sublimation	Lyoc technology
3.	Spray drying	Quicksolv technology
4.	Moulding	Nanocrystal technology
5.	Direct compression	Orasolv technology
6.	Wet granulation	Durasolv technology
7.	Dry granulation	Flashtab technology
8.	Sintering	Ziplet technology
9.	Humidity treatment	Oraquick technology

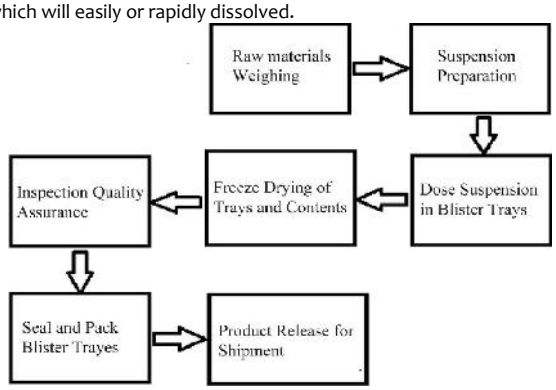
Sintering:

Sintering is nothing but only involves densification and grain growth. Sintering technology increases tablet strength by heating tablet ingredients at high temperature and then re-solidifying them at low temperature. In this process thermal energy is applied on powder compact due to this compact get densified and increase grain size which ultimately improves tablet strength.

Zydis technology:

It is a different type of technology in which freeze dried and solid dosage form can be administered without taking water and

dissolved in less than 3 sec when placed on tounge. Drug is trapped in water soluble matrix and then freeze dried to generate a product which will easily or rapidly dissolved.



Matrix has excipients to improve strength (gelatin, dextrin) and rigidity of tablets (mannitol, sorbitol). These are polysaccharides in nature. Floating agents are also added to avoid the shrinkage of products such as Xanthum gum and acacia.

Ziplet technology:

In this technology drugs which are insoluble in water and drugs coated microparticals are used. Commonly used water soluble sugars or salts for disintegration but instead of these sugars or salts we can also used water insoluble-inorganic excipients in ziplet technology which provides us better disintegration then sugars or salts. These water insoluble-inorganic excipients provide excellent physical resistance to the FDT.

TASTE MASKING OF FDT AND WORLD MARKET SCENARIO [19]

Taste masking is necessary in FDT to avoid bitterness of excipients. Sugar based excipients are used to avoid the bitterness.

There are different approaches for taste masking in FDT:

1. Drug solution is coated with polymer.
2. Directly coated drug particles.
3. By granulating the drug.

Table.3: Fast Disintegrating Products Available In World Market

Fast disintegrating products available in Indian market			FDT available in other countries		
Trade Name	**Active Drug**	**Manufacturer**	**Trade Name**	**Active Drug**	**Manufacturer**
Ugesic	Piroxicam	Mayer organic Ltd	Zyprex	Olanzapine	Eli.Lilly
Zofer MD	Ondansetron	Sun pharma	Zofran ODT	Ondansetron	GSK
Vomidon md	Domperidone	Oclare lab	Zoming ZMT	Zolmitriptan	Astra-Zeneca
Mosid md	Mosapride	Torrent pharma	Benadryl fastmelt	Diphenhydramine	Pfizer
Nimulid MDT	Nimesulide	Panacea biotech	Feldene melt	Piroxicam	Pfizer
Rofixx md	Rofecoxib	Cipla Ltd Mumbai	Tempra Quicklets	Acetaminophen	Bristol Myers Squibb
Olanex istab	Olanzapine	Ranbaxy Ltd labs	-------	-------	-------
Romilast	Montelukast	Ranbaxy labs Ltd	-------	-------	-------
Nime MD	Nimesulide	Maiden pharma	-------	-------	-------
Lonazep MD	Olnazepine	Sun pharma	-------	-------	-------

CONCLUSION

Manufacturing of FDT dosages forms helps in solving the different problems which are encountered in administration of medicine in the geriatrics and pediatrics. Hence FDT's are widely used or demanded in the world market. They are easily accepted at physician as well as patient levels.

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