TABLETS AND COATING OF TABLETS

SUB:PHARMACEUTICAL TECHNOLOGY-II
COURSE:III BPHARMACY I SEMESTER
PRESENTED BY:C.P SREEKANTH REDDY
DEPARTMENT OF PHARMACEUTICS

INTRODUCTION

- Tablet is defined as a compressed solid dosage form containing medicaments with or without excipients. According to the Indian Pharmacopoeia Pharmaceutical tablets are solid, flat or biconvex dishes, unit dosage form, prepared by compressing a drug or a mixture of drugs, with or without diluents

- The a They are unit dosage form and offer the greatest capabilities of all oral dosage form for the greatest dose precision and the least content variability.
- • Cost is lowest of all oral dosage form.
- • Lighter and compact.
- • Easiest and cheapest to package and strip.
- • Easy to swallowing with least tendency for hang-up. • Sustained release product is possible by enteric coating antages of the Tablet dosage form are:

- • Objectionable odour and bitter taste can be masked by coating technique.
- • Suitable for large scale production.
- • Greatest chemical and microbial stability over all oral dosage form.
- • Product identification is easy and rapid requiring no additional steps when employing an embossed and/or monogrammed punch face. Disadvantages of Tablet dosage form are:

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Disadvantages of Tablet dosage form are:

- • Difficult to swallow in case of children and unconscious patients.
- • Some drugs resist compression into dense compacts, owing to amorphous nature, low density character.
- • Drugs with poor wetting, slow dissolution properties, optimum absorption high in GIT may be difficult to formulate or manufacture as a tablet that will still provide adequate or full drug bioavailability.
- • Bitter testing drugs, drugs with an objectionable odor or drugs that are sensitive to oxygen may require encapsulation or coating. In such cases, capsule may offer the best and lowest cost.

Different types of Tablets

- (A) Tablets ingested orally: 1. Compressed tablet, e.g. Paracetamol tablet
- 2. Multiple compressed tablet
- 3. Repeat action tablet
- 4. Delayed release tablet, e.g. Enteric coated Bisacodyl tablet
- 5. Sugar coated tablet, e.g. Multivitamin tablet
- 6. Film coated tablet, e.g. Metronidazole tablet
- 7. Chewable tablet, e.g. Antacid tablet (B) Tablets used in oral cavity: 1. Buccal tablet, e.g. Vitamin-c tablet 2. Sublingual tablet, e.g. Vicks Menthol tablet 3. Troches or lozenges 4. Dental cone

- (c) Tablets administered by other route:
- 1. Implantation tablet
- 2. Vaginal tablet, e.g. Clotrimazole tablet
- (D) Tablets used to prepare solution: 1. Effervescent tablet, e.g. Dispirin tablet (Aspirin) 2. Dispensing tablet, e.g. Enzyme tablet (Digiplex) 3. Hypodermic tablet 4. Tablet triturates e.g. Enzyme tablet (Digiplex)

Tablet Ingredients

- In addition to active ingredients, tablet contains a number of inert materials known as additives or excipients. Different excipients are
- 1. Diluent
- 2. Binder and adhesive
- 3. Disintegrents
- 4. Lubricants and glidants
- 5. Colouring agents
- 6. Flavoring agents
- 7. Sweetening agents

EXCIEPIENTS- functions

- • Impart weight, accuracy, & volume(its allow acccuracy of dose)
- • Improve solubility
- • Increase stability
- • Enhance bioavailability
- • Modifying drug release
- • Assist pdt identification
- • Increase patient acceptability
- • Facilitate dosage form design

• 1. Diluent:

- • : Diluents are fillers used to make required bulk of the tablet when the drug dosage itself is inadequate to produce the bulk. Secondary reason is to provide better tablet properties such as improve cohesion, to permit use of direct compression manufacturing or to promote flow. A diluent should have following properties:
- 1. They must be non toxic
- 2. They must be commercially available in acceptable grade
- 3. There cost must be low
- 4. They must be physiologically inert
- 5. They must be physically & chemically stable by themselves & in combination with the drugs.
- 6. They must be free from all microbial contamination.
- 7. They do not alter the bioavailability of drug.
- 8. They must be color compatible.

Commonly used tablet diluents

- 1. Lactose-anhydrous and spray dried lactose 2. Directly compressed starch-Sta Rx 1500
- 3. Hydrolyzed starch-Emdex and Celutab
- 4. Microcrystalline cellulose-Avicel (PH 101and PH 102)
- 5. Dibasic calcium phosphate dehydrate
- 6. Calcium sulphate dihydrate
- 7. Mannitol
- 8. Sorbitol
- 9. Sucrose- Sugartab, DiPac, Nutab
- 10. Dextrose 2.

or to form cohesive compacts for directly compressed tablet.

- • Example: Acacia,
- tragacanth- Solution for 10-25% Conc.
- • Cellulose derivatives- Methyl cellulose, Hydroxy propyl methyl cellulose, Hydroxy propyl cellulose • Gelatin- 10-20% solution • Glucose- 50% solution • Polyvinylpyrrolidone (PVP)- 2% conc.
- • Starch paste-10-20% solution
- • Sodium alginate • Sorbitol

3. Disintegrants: Added to a tablet formulation to facilitate its breaking or disintegration when it contact in water in the GIT.

- • Example: Starch- 5-20% of tablet weight.
- • Starch derivative – Primogel and Explotab (1-8%)
- • Clays- Veegum HV, bentonite 10% level in colored tablet only
- • Cellulose • Cellulose derivatives- Ac- Di-Sol (sodium carboxy methyl cellulose)
- • Alginate • PVP (Polyvinylpyrrolidone), cross-linked

to prevent adhesion of the tablet materials to the surface of dies and punches, reduce inter particle friction and may improve the rate of flow of the tablet granulation.

- Glidants are intended to promote flow of granules or powder material by reducing the friction between the particles.
- • Example: Lubricants- Stearic acid, Stearic acid salt - Stearic acid, Magnesium stearate, Talc, PEG (Polyethylene glycols), Surfactants
- • Glidants- Corn Starch – 5-10% conc., Talc-5% conc., Silica derivative - Colloidal silicas such as Cab-OSil, Syloid, Aerosil in 0.25-3% conc.
- • 5. Coloring agent: The use of colors and dyes

5. Coloring agent: The use of colors and dyes in a tablet has three purposes:

- (1) Masking of off color drugs
- (2) Product Identification
- (3) Production of more elegant product • All coloring agents must be approved and certified by FDA. Two forms of colors are used in tablet preparation – FD &C and D & C dyes. These dyes are applied as solution in the granulating agent or Lake form of these dyes. Lakes are dyes absorbed on hydrous oxide and employed as dry powder coloring. • Example: FD & C yellow 6-sunset yellow,FD & C yellow 5- Tartrazine ,FD & C green 3- Fast Green,FD & C blue 1-

6. Flavoring agents: For chewable tabletflavor oil are used
7. Sweetening agents: For chewable tablets: Sugar, mannitol.

- • Saccharine (artificial): 500 time's sweeter than sucrose
- • Disadvantage: Bitter aftertaste and carcinogenic
- • Aspartame (artificial)
- • Disadvantage: Lack of stability in presence of moisture.