

TABLETS

By

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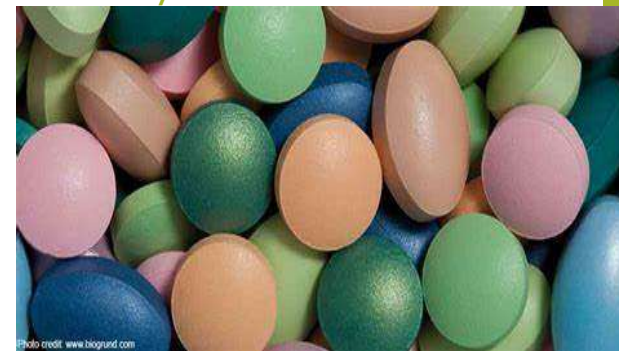
Introduction

- According to USP, 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.



General Properties

- A tablet must be strong and hard to withstand mechanical shock during manufacturing, packing, shipping, dispensing and use.
- The drug content of the tablet must be bioavailable that is, the tablet must be able to release its content in a predictable and reproducible manner.
- The tablet must be chemically and physically stable to maintain its chemical and physical attributes during manufacture, storage, and use.
- The tablet should have elegant product identity which is free from any tablet defect.
- Tablets must be uniform in weight and in drug content.



Advantages

From patients stand point:

- They are easy to carry, easy to swallow and they are attractive in appearance.
- Unpleasant taste can be masked by sugar coating and they do not require any measurement of dose.
- Some of the tablets are divided into halves and quarters by drawing lines during manufacturing to facilitate breakage whenever a fractional dose is required.

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From the standpoint of manufacturer:

- An accurate amount of medicament, even if very small, can be incorporated.
- Tablets provide best combined properties of chemical, mechanical and microbiological stability of all the oral dosage forms.
- Since they are generally produced on a large scale, therefore, their cost of production is relatively low, hence economical.
- They are in general the easiest and cheapest to package and ship among all oral dosage forms.
- Some specialized tablets may be prepared for modified release profile of the drug.
- Product identification is potentially the simplest and cheapest requiring no additional processing steps when employing an embossed or monogrammed punch face.

Disadvantages

- Difficult to swallow in case of children and unconscious patients.
- 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 tasting 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.
- Some drugs resist compression into dense compacts, owing to amorphous nature, low density character.

Types of Tablets

(a) Tablets ingested orally:

- Compressed tablets
- Multiple compressed tablets
- Enteric coated tablets
- Sugar coated tablets
- Film coated tablets
- Chewable tablets

(b) Tablets used in the oral cavities:

- Buccal Tablets
- Sublingual tablets
- Lozenges
- Dental cones

(c) Tablets administered by other routes:

- Implantation tablets
- Vaginal tablets

(d) Tablets used to prepare solutions:

- Effervescent tablets
- Dispensing tablets
- Hypodermic tablets
- Tablet triturates

Tablets Ingested Orally

1. Compressed tablets

- These tablets are formed by compression and contain no special coating. They are made from powdered, crystalline or granular materials, alone or in combination with suitable excipients.
- These tablets contain water soluble drugs which after swallowing get disintegrated in the stomach and its drug contents are absorbed in the gastrointestinal tract and distributed in the whole body. e.g. Aspirin (Dispirin) paracetamol tablets (Crocin).



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2. Multiple compressed tablets / Layered tablets

- These are compressed tablets made by more than one compression cycle. Such tablets are prepared by compressing additional tablet granulation on a previously compressed granulation. The operation may be repeated to produce multilayered tablets of two or three layers.
- To avoid incompatibility, the ingredients of the formulation except the incompatible material are compressed into a tablet and then incompatible substance along with necessary excipients are compressed over the previously compressed tablet.

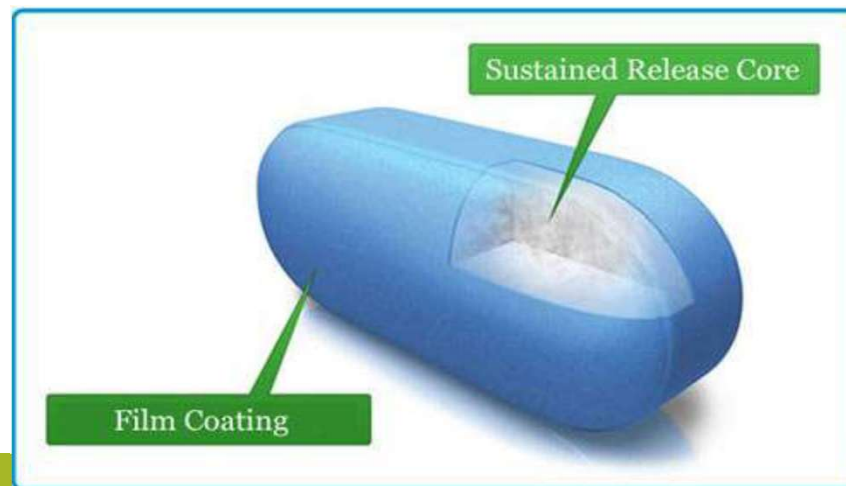


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3. Sustained action tablets

- These are the tablets which after oral administration release the drug at a desired time and prolong the effect of the medicament. These tablets when taken orally release the medicament in a sufficient quantity as and when required to maintain the maximum effective concentration of the drug in the blood throughout the period of treatment. e.g. Diclofenac SR tablets.



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4. Enteric coated tablets

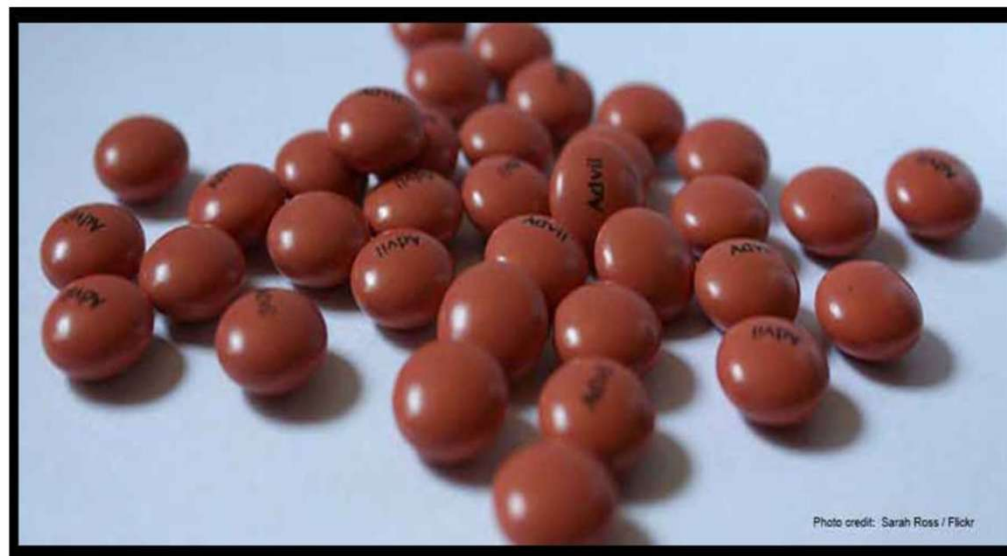
- These are compressed tablet meant for administration by swallowing and are designed to by-pass the stomach and get disintegrated in the intestine only.
- These tablets are coated with materials resistant to acidic pH (like cellulose acetate phthalate, CAP) of the gastric fluid but get disintegrated in the alkaline pH of the intestine.



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5. Sugar coated tablets

- These are compressed tablets containing a sugar coating. Such coatings are done to mask the bitter and unpleasant odour and the taste of the medicament. The sugar coating makes the tablet elegant and it also safeguard the drug from atmospheric effects.



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6. Film coated tablets

- The compressed tablets having a film coating of some polymer substance, such as hydroxy propyl cellulose, hydroxy propyl methyl cellulose and ethyl cellulose.
- The film coating protects the medicament from atmospheric effects. Film coated tablets are generally tasteless, having little increase in the tablet weight and have less elegance than that of sugar coated tablets.



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7. Chewable tablets

- These are the tablets which are required to be broken and chewed in between the teeth before ingestion. These tablets are given to the children who have difficulty in swallowing and to the adults who dislike swallowing.
- These tablets should have very acceptable taste and flavour. Ex- Antacid tablets(Digiene).

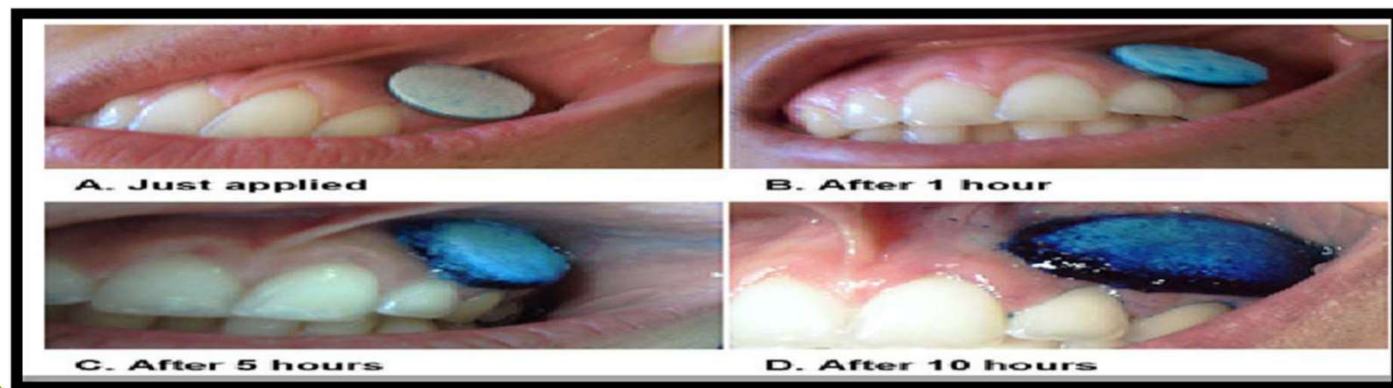


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Tablets used in oral cavity

1. Buccal tablets

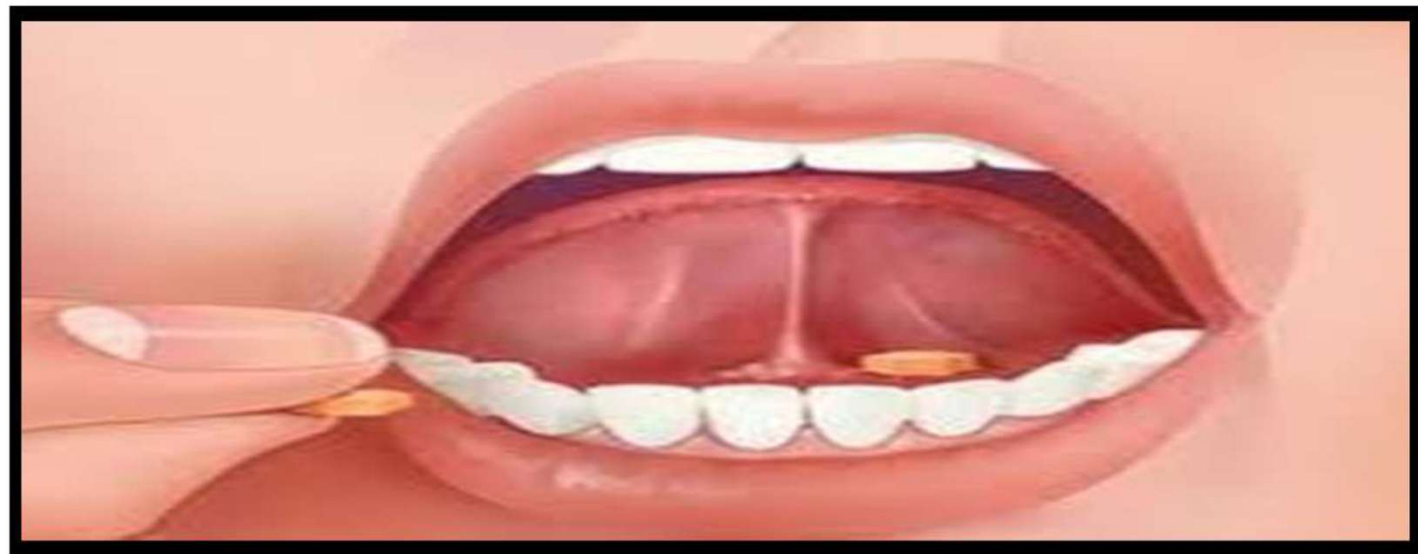
- These tablets are to be placed in the side of the cheek (buccal pouch) where they dissolve or erode slowly and are absorbed directly in the buccal cavity without passing into the alimentary canal.
- Therefore, they are formulated and compressed with sufficient pressure to give a hard tablets. e.g. Progesterone tablets.



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2. Sublingual tablets

- These tablets are to be placed under the tongue where they dissolve or disintegrate quickly and are absorbed directly without passing into GIT. e.g. tablets of nitroglycerin, isoproterenol hydrochloride or erythrityl tetranitrate.



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3. Lozenges tablets

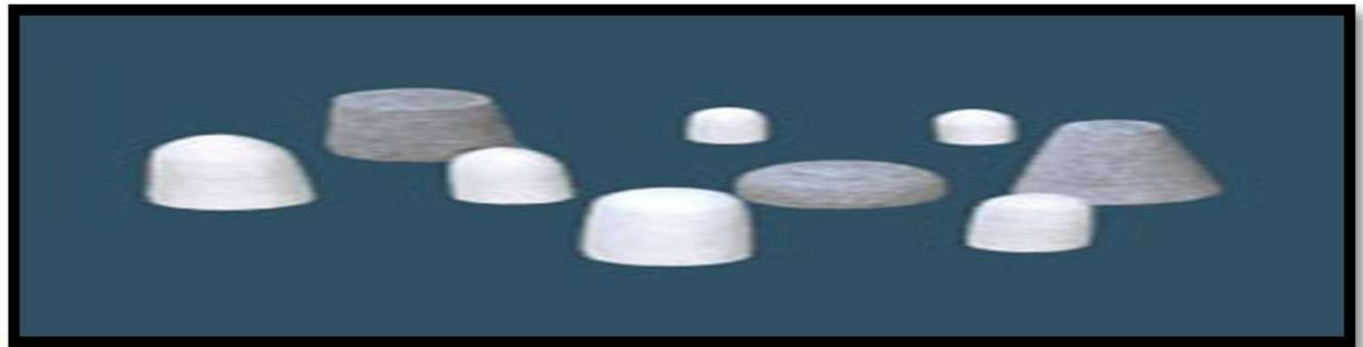
- These tablets are designed to exert a local effect in the mouth or throat. These tablets are commonly used to treat sore throat to control coughing in common cold. They may contain local anaesthetics, antiseptics, antibacterial agents and astringents.
- These are prepared by compression at a high pressure by the moulding process and generally contain a sweetening agent, flavouring agent and a substance which reduces a cooling effect. e.g. Vicks lozenges, Strepsils.



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4. Dental cones

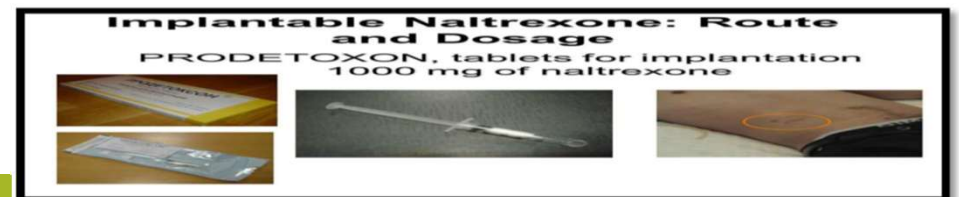
- These are compressed tablets meant for placement in the empty sockets after tooth extraction. They prevent the multiplication of bacteria in the socket following such extraction by using slow-releasing antibacterial compounds or to reduce bleeding by containing the astringent.
- These tablets contain an excipient like lactose, sodium bicarbonate and sodium chloride. These cones generally get dissolved in 20 to 40 minutes time.



Tablets administered by other routes

1. Implantation Tablets

- These tablets are placed under the skin or inserted subcutaneously by means of minor surgical operation and are slowly absorbed. These may be made by heavy compression but are normally made by fusion. The implants must be sterile and should be packed individually in sterile condition. Implants are mainly used for the administration of hormones such as testosterone steroids for contraception. These tablets are very usefully exploited for birth control purpose in human beings.
- The disadvantages of implant tablets are their administration, changing rate of release with change of surface area and possibility of tissue reactions.



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2. Vaginal tablets

- These tablets are meant to dissolve slowly in the vaginal cavity. The tablets are typically ovoid or pear shaped for the ease of insertion. these tablets are used to release steroids or antimicrobial agents. the tablets are often buffered to promote a pH favorable to the action of a specified antimicrobial agent. The contains easily soluble components like lactose or sodium bicarbonate.



Tablets used to prepare solutions

1. Effervescent tablets

- These tablets along with the active medicament contain ingredients like sodium bicarbonate, citric acid and tartaric acid which react in the presence of water liberating carbon dioxide and producing effervescence leading to disintegration of the tablet, thus fastens solution formation and increase the palatability. Eg. Histac (Ranitidine)



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2. Dispensing tablets

- These tablets provide a convenient quantity of potent drug that can be readily convert into powders and incorporate into liquids, thus circumventing the necessity to weigh small quantities. these tablets are supplied primarily as a convenience for extemporaneous compounding and should never be dispensed as dosage form.
- e.g. The drugs commonly incorporated are mild silver potentiates, bichloride of mercury merbromin and quaternary ammonium compounds.



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3. Hypodermic tablets

- Hypodermic tablets are soft, readily soluble tablets and originally were used for the preparation of solutions to be injected. These tablets are dissolved in sterile water or water for injection and administered by parenteral route. these tablets are not preferred now-a-days because the resulting solution is not always sterile.



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4. Tablet triturates (Moulded tablets)

- These are powders moulded into tablets. They are flat, circular discs, usually containing a potent substance mixed with lactose, lactose and sucrose, dextrose, or other suitable diluent.
- Since they are intended to disintegrate very quickly in contact with moisture, water insoluble adjuncts are avoided. The name 'tablet triturate' is appropriate because they usually contain triturations (trituration = dilution with an inert substance).

