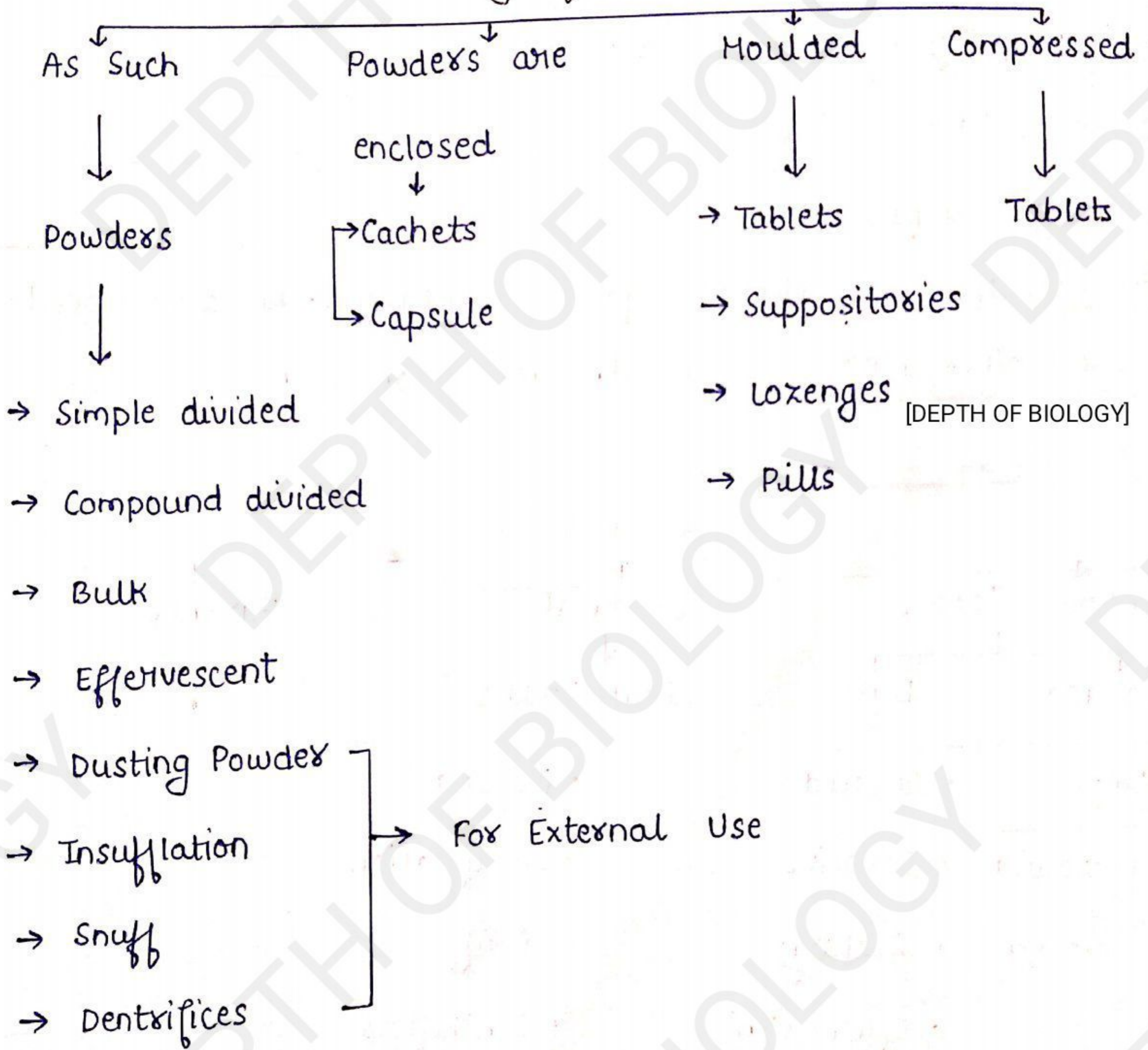


POWDERS

Solid dosage forms



① Powders → Powders are homogeneous mixture of drugs and chemicals in a dry fine state of subdivision.

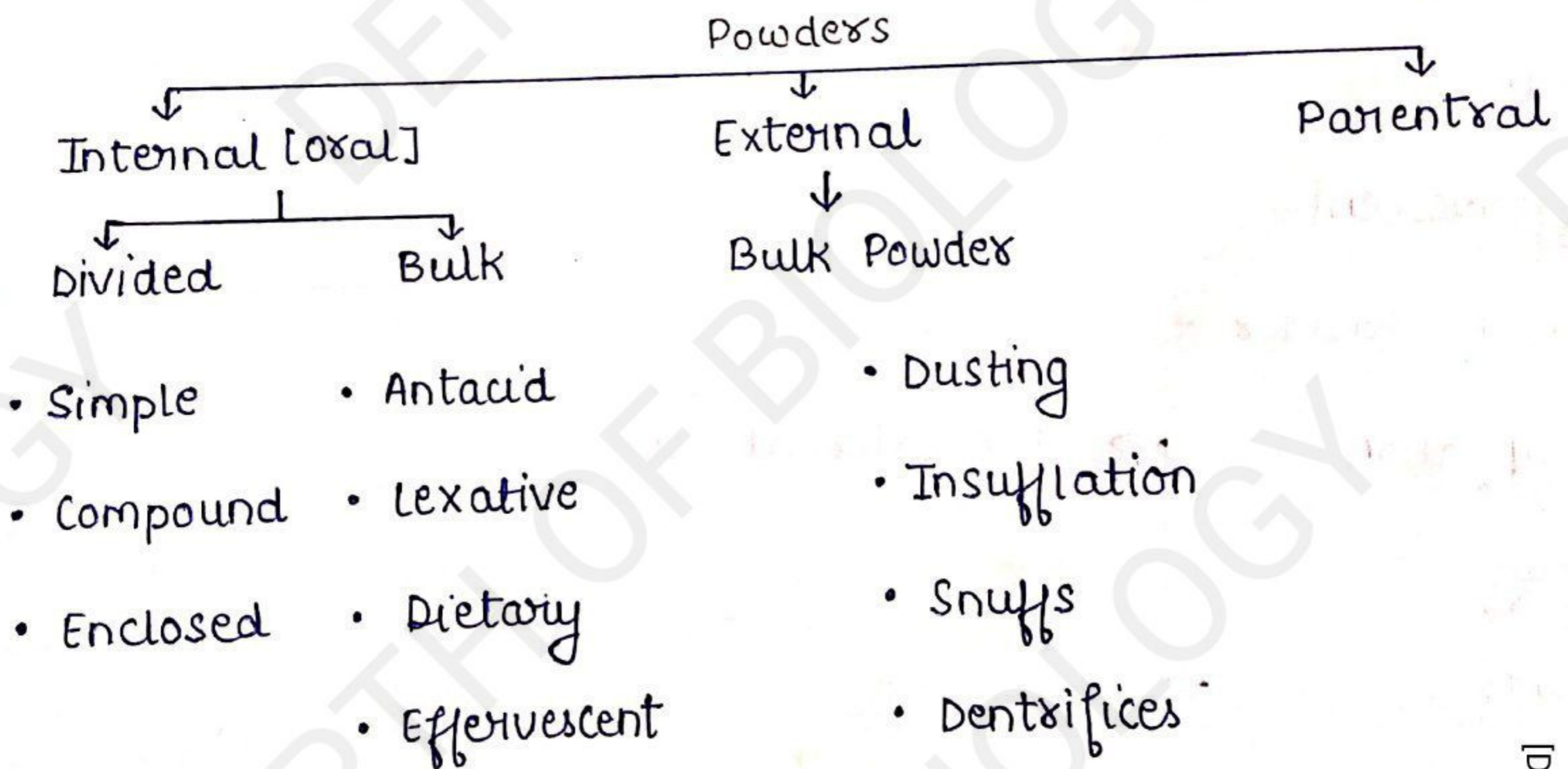
⇒ These are solid dosage form of medicament which are meant for internal and external use.

## \* Character of good Powders :-

[DEPTH OF BIOLOGY]

- ① Finest state of subdivision
- ② A perfectly homogenous preparation
- ③ Small Particle Size
- ④ large surface area
- ⑤ Absorption capacity req. for → Antacid, Antidiarrhoeal and other used for local treatment on skin.

## \* Classification of Powders :- [DEPTH OF BIOLOGY]



## \* Advantages of Powders

- ① One of the oldest dosage form and are used both internally and externally.
- ② More stable than liquid and semi solid dosage form.
- ③ chances of incompatibility are less as compare to liquid dosage form.

[DEPTH OF BIOLOGY]

- ④ Onset of action of powdered drug is rapid due to smaller particle size.
- ⑤ More easy to carry than liq. dosage form.
- ⑥ Small children and elderly patient easily take the powdered drug as such or in water or other liquid.
- ⑦ More economical as compared to other solid dosage form.

\* Disadvantage of Powders :-

[DEPTH OF BIOLOGY]

- ① Drug having bitter, nauseous and unpleasant taste cannot be dispensed in powdered form.
- ② Drug which get affected by atmospheric condition are not suitable in powder form.
- ③ Time Consuming [DEPTH OF BIOLOGY]
- ④ Inaccuracy of dose, particularly bulk powders.

[A] Divided Powders → They are dispensed in the form of individual doses.

\* Following steps are involved in preparation :-

- ① Size Reduction → Trituration
- Pulverization
- Levigation [DEPTH OF BIOLOGY]

- ② Mixing of Powders → Spatulation  
 → Trituration  
 → Geometric dilution  
 → sifting [DEPTH OF BIOLOGY]  
 → Tumbling

③ Dividing

④ Packing and labelling

① Simple Powder → It contains only one ingredient either in crystalline or amorphous form.

Eg → Dispense six powder of "aspirin", each powder contain 300 mg of aspirin. [DEPTH OF BIOLOGY]

Rx

[DEPTH OF BIOLOGY]

Aspirin 300 mg

Make Powder

Direction → One powder to be taken after every eight hour.

② Compound Powder → It contain two or more than two substance which are mixed together and then divided into desired no. of individual doses

which are dispensed into powder paper.

Example → Dispense eight Powder of A, P, C

Rx

Aspirin 300 mg

Paracetamol 150 mg

Caffeine 50 mg

Make a powder

Direction → One powder to be taken when need arise

③ Powder Enclosed in Cachets → Cachets are solid unit dosage form. [DEPTH OF BIOLOGY]

→ They are moulded rice-flour capsule (powder) containers are formed by sealing two concave disk of wafer sheet.

Advantages :-

① For administration of nauseating and unpleasant taste drug. [DEPTH OF BIOLOGY]

② Large dose can be enclosed than tablet or a capsule.

Types of Cachets [0.2 - 2g]

Dry seal ————— | ————— Wet seal

No moisture for sealing

Water is used to seal.

[DEPTH OF BIOLOGY]

## Administration of Cachets

Before intake, a cachets should be immersed in water for a few seconds. ↓↓ [DEPTH OF BIOLOGY]

Placed on tongue. ↓↓

Swallowed with a draught of water

## # Bulk Powder for internal Use :-

Powders are dispensed in bulk, when accuracy of dosage is not important.

⇒ Supplied in wide mouthed containers.

⇒ Non-potent substances like antacids, laxatives etc.

are dispensed as bulk powders. [DEPTH OF BIOLOGY]

① Effervescent Powders → They are the form of medication for internal use.

[DEPTH OF BIOLOGY]

⇒ In presence of water, acid and base react to liberate  $\text{CO}_2$  and producing effervescence.

⇒ They are dissolved in water and taken immediately after effervescence subsides.

Advantage :- ①  $\text{CO}_2$  hastens absorption, stimulates

flow of gastric juice. [DEPTH OF BIOLOGY]

⇒ CO<sub>2</sub> acts as a carminative.

[DEPTH OF BIOLOGY]

## # Preparation Methods

Wet Method ← | → Dry or Fusion Method

### • Wet Method :-

⇒ Powder each ingredients and mix them.

⇒ Bind the powder mass by moistening the non-solvent usually alcoholic mixture and prepare dough like

mass. [DEPTH OF BIOLOGY]

⇒ Passed through a 8 sieve and granules are dried at temperature not exceeding 60°C.

⇒ Granule are again passed through sieve and packaged in air tight containers.

### • Dry / Fusion Method :-

⇒ Ingredient except citric acid are dried and passed through a sieve 60. [DEPTH OF BIOLOGY]

⇒ Powders are mixed and freshly powdered citric acid is added last.

⇒ Mixture is spread in shallow dish (Porcelain dish) and placed on water bath (95°C - 100°C) without stirring.

⇒ A pestry mass is soon formed. [DEPTH OF BIOLOGY]

⇒ Granulation, drying and regranulation are then carried out.

[DEPTH OF BIOLOGY]

# Bulk Powder for external use :-

Bulk powder meant for external use are non-potent substance supplied in cardboard, glass or plastic containers.

Example → Dusting Powder

[DEPTH OF BIOLOGY]

→ Insufflation → into body cavities, ear, nose

→ Snuffs → Inhaled into nostrils

→ Dentifrices → for cleaning teeth

- Dusting Powder → Meant for external use to the skin and generally applied in a every fine state of subdivision to avoid local irritation.

It should be passed through sieve no. 80 to enhance their effectiveness.

• Types ⇒ (a) Medical

[DEPTH OF BIOLOGY]

(b) Surgical

Medical dusting powder are used mainly for superficial skin condition.

[DEPTH OF BIOLOGY]

Surgical dusting powder are used in body cavities and also on major wounds and umbilical cords of infants.



⇒ Must be sterile before use.

⇒ Dusting powder are generally prepared by mixing two or more ingredient. ↓ [DEPTH OF BIOLOGY]

Talc and Kaolin are more commonly used because they are chemically inert. ↓

sterilised by dry heat method [160° for 2 hrs] before use.

Use → Antiseptic, Astringent, absorbent, antipruritic action.

Example → Dispense 50 gm of dusting powder

Rx

Purified talc, sterilised 50 gm

Starch in powder 25 gm

ZnO in powder 20 gm

Salicylic acid in powder 5 gm

Make a powder

Direction → Applied on affected part two or three times a ~~time~~ day.

# Method → Powdered all the ingredient.

⇒ weigh the required quantity of purified talc, starch, ZnO and salicylic acid.

⇒ Mix them in ascending order of their weight.

⇒ Pass through a sieve no. 85. [DEPTH OF BIOLOGY]

⇒ Again mix tightly. ↓↓

Transfer the powder in softer top container to protect it from atmospheric contamination.

### # Special Problems and Remedies

Some prescription require special treatment to permit their proper dispensing. [DEPTH OF BIOLOGY]

#### ① Hygroscopic and Deliquescent :-

⇒ Powder containing hygroscopic and deliquescent ingredient  
⇒ Substance absorb moisture from the air [hygroscopic]  
and liquefy forming a solution [Deliquescent]

Example → Ammonium Bromide, Sodium Bromide,  
Calcium Bromide, Sodium Iodide, Pepsin,  
Potassium citrate.

#### # Remedies :- [DEPTH OF BIOLOGY]

- (a) Dispense in granular form.
- (b) Do not reduce to a very fine powder
- (c) Use double wrapped or cellophane envelopes.
- (d) Use of light magnesium oxide as absorbent.

#### ② Efflorescent → Powder containing efflorescent ingredient.

⇒ Substance liberate their water and crystallisation  
are said to be efflorescent. [DEPTH OF BIOLOGY]

⇒ Due to liberation of water powder becomes pasty or  
tends liquify.

Example :- Alum , Sodium Acetate , Sodium Carbonate ,  
Atropine Sulphate , Caffeine , Citric acid.

Remedies :-

① use corresponding anhydrous salt and double wrapped to prevent absorption of moisture from the air.

② Eutectic Mixture → when two or more substance are mixed together ↓ [DEPTH OF BIOLOGY]

They liquefy due to formation of a new compound which has a low melting point than room temperature.

Such substance are called eutectic substance.

Example → Menthol , Camphor , Phenol , Aspirin , thymol.

Remedies :- [DEPTH OF BIOLOGY]

① when eutectic mixture is present in small proportion and other solid ingredient are present liquefiable substance first should be tolerate forming eutectic.

② All other liquid are added and other substance in the form of fine powder are gradually incorporated.

③ Eutectic mixture substance is diluted the equal volume of absorbent [MgO] in divided powder. [DEPTH OF BIOLOGY]

Geometric Dilution  $\rightarrow$  This method is used when potent substance are to mixed with a large amount of diluent.

$\Rightarrow$  The potent drug is placed upon an approximately equal volume of diluent in a mortar and slightly mixed by titration. [DEPTH OF BIOLOGY]

$\Rightarrow$  A second portion of diluent equal in volume to powder mixture in mortar is added and tituration is repeated.

$\Rightarrow$  Process is continued, adding diluent equal in volume to mixture in mortar in each step until all diluent incorporate.

For example  $\rightarrow$  If 100 mg of Potent drug is required to [DEPTH OF BIOLOGY] be mixed the 900 mg of lactose.

100 mg of Potent drug + 10 mg of lactose = 200 mg mixture

200 mg of mixture + 200 mg of lactose = 400 mg mixture

400 mg of mixture + 400 mg of lactose = 800 mg mixture

800 mg of mixture + remaining portion = 1000 mg mixture of lactose [DEPTH OF BIOLOGY]