Incompatibility

→ Two or more Ingredient mix
  ↳ Then undesireable change
    - → Physical
    - → Chemical
    - → Therapeutic

* Not occur only during compound and dispense but also at any stage :- ⓐ During formulation
  - ⓑ Manufacturing
  - ⓒ Packaging
  - ⓓ Addition of drug

* Important to determine Incompatibility :-
  1. Safety of Medicament
  2. Efficacy
  3. Apperance
  4. Purpose

Types of Incompatibility

Physical Incomp.

* 2 or >2 substance combined together
* Physical changes takes Place unacceptable Product is formed.
  - → Colour Change
  - → Odour
  - → Taste
  - → Viscosity
* They are usually visible and easily correctable.

chemical Incomp.

* Chemical Interaction b/w Ingredient of Prescription ⇓ toxic and Inactive Product may formed.
* Chemical incomp. occur due to :
  - → oxidation reduction
  - → Acid base hydrolysis
  - → Combination rxn
* noticed by Precipitation effervescence, decomposition, Colour change

Therapeutic Incomp.

- → Pharmacokinetic ↓ ADME
- → Pharmacodynamic ↓
  - → Synergism
  - → Additive
  - → Antagonism

Physical Incompatibility

Correction → Change the order or mixing of the prescription.
→ Emulsification
→ Adding of suspending agent.

Example → ⓐ Immiscibility ⓑ Insolubility
ⓒ Precipitation ⓓ Liquification

ⓐ Oil and H_2O → Miscible with the help of emulsifying agent.

Example → Castor oil → 15 ml [By addition of
Water → 60 ml Emulsifying agent]

ⓑ Insoluble → Inability of material to dissolve [Many Inorg. and Org. compound insoluble in particular solvent]

Example → Epid. Sulphate — 0.25 gm
Menthol — 0.02 ml
Liq. Paraffin — 30 ml

ⓒ Precipitation → If the solvent is added which is insoluble.

Example → Resin Insoluble in H_2O, If we add resin then agglomerate forming in diffusible precipitates.

So to prevent this, slowly add dilute tincture with fast stirring or by adding thickening agent.

ⓓ Liquefication → If two solid is added whose have low melting point then soft Mass is formed.
[Eutectic mixture]

* Shown by Camphor Menthol, Menthol, Phenol
* These type of Substance create problem when they are dispersed form in powder form.

Example :-

Menthol — 5 gm
Camphor — 5 gm
Ammonium chloride — 30 gm
Light Mg Carbonate — 60 gm

Chemical Incompatibility

Tolerated

Chemical interaction can be minimised by changing the order of mixing.

↓

No alteration is made in the formulation.

Adjusted

Addition or substitution of one of the reacting ingredient of a prescription with another of equal therapeutic value.

eg → Caffeine citrate

Chemical Incompatibility :-

ⓐ May be Intentional

ⓑ UnIntentional

Example ⇒ ① Precipitating yielding Interaction < Diffusible / Indiffusible

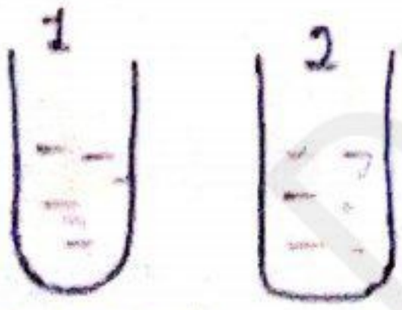
↳ For dispensing diffusible ~ method A

↓

when diffusible PPt. are form in very small quantity.

↳ For dispensing indiffusible → Method B

Method A → The vehicle into two equal portion

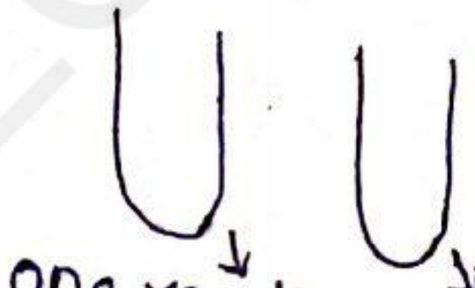


one reacting Substance

other reacting Substance

⇒ Mix the both by slowly adding one portion to the other with rapid stirring.

Method B ⇒ Used when in diffusible ppt. form in long quantity.



⇒ 2 g / 100 ml C.T. Powder →  (mortar), Now add second part of vehicle to produce smooth mucilage.

↓

Then add other reacting substance

one reacting substance in one portion

vehicle

→ Now mix 1 with 2 with rapid stirring

→ Labelling ⇒ Shake well-before use

② Soluble Iodide Incomp. ⇒ Iodide —O→ Iodine [undesirable]

Example → Oxidation of Iodide / ferrous iodide with Potassium chlorate.

- Potassium chloride + Solub. Iodides ⇒ I_2 liberate

③ Causing evolution of CO_2

Eg → Bismuth Sub Nitrate + Na Bicarbonate + H_2O →

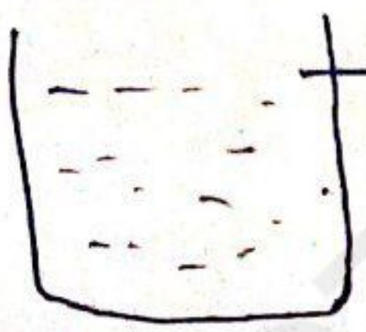
CO_2 liberate

④ Incompatible of emulsifying agent → Here in some cases, phase inversion take place.

o/w convert into w/o and w/o convert into o/w.

⑤ Colour stability of dyes → Most of the dyes/colour used in pharmaceutical formulation influenced by their ionisation depend on pH of solution.

Example →



→ Phenolphthalein ⇒ colourless in acidic solution

↓

Red in alkaline mixture.

Therapeutic Incompatibility

Prescriber prescribe to treat a particular effect but this show different nature.

Causes :-

① Overdose

② Improper dosage form

③ Contraindicated

④ Antagonistic drug

⑤ Synergistic

[DEPTH OF BIOLOGY]