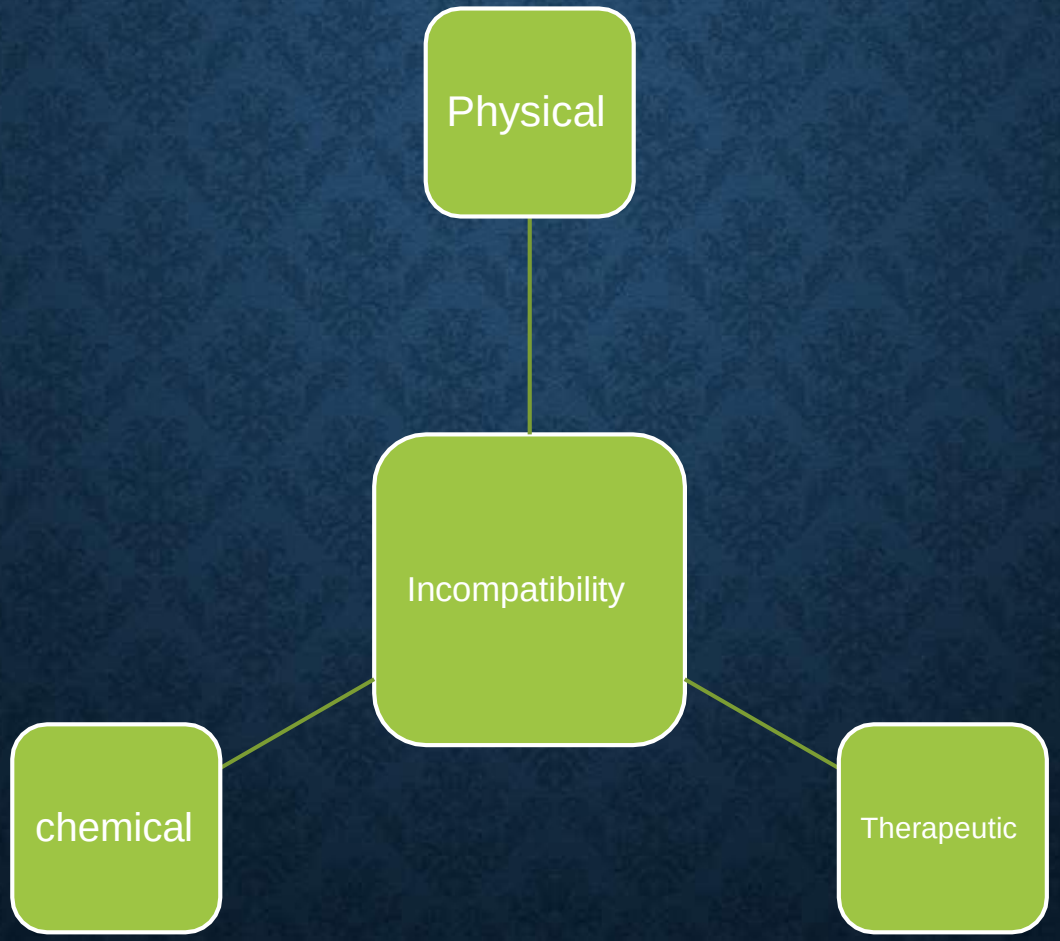
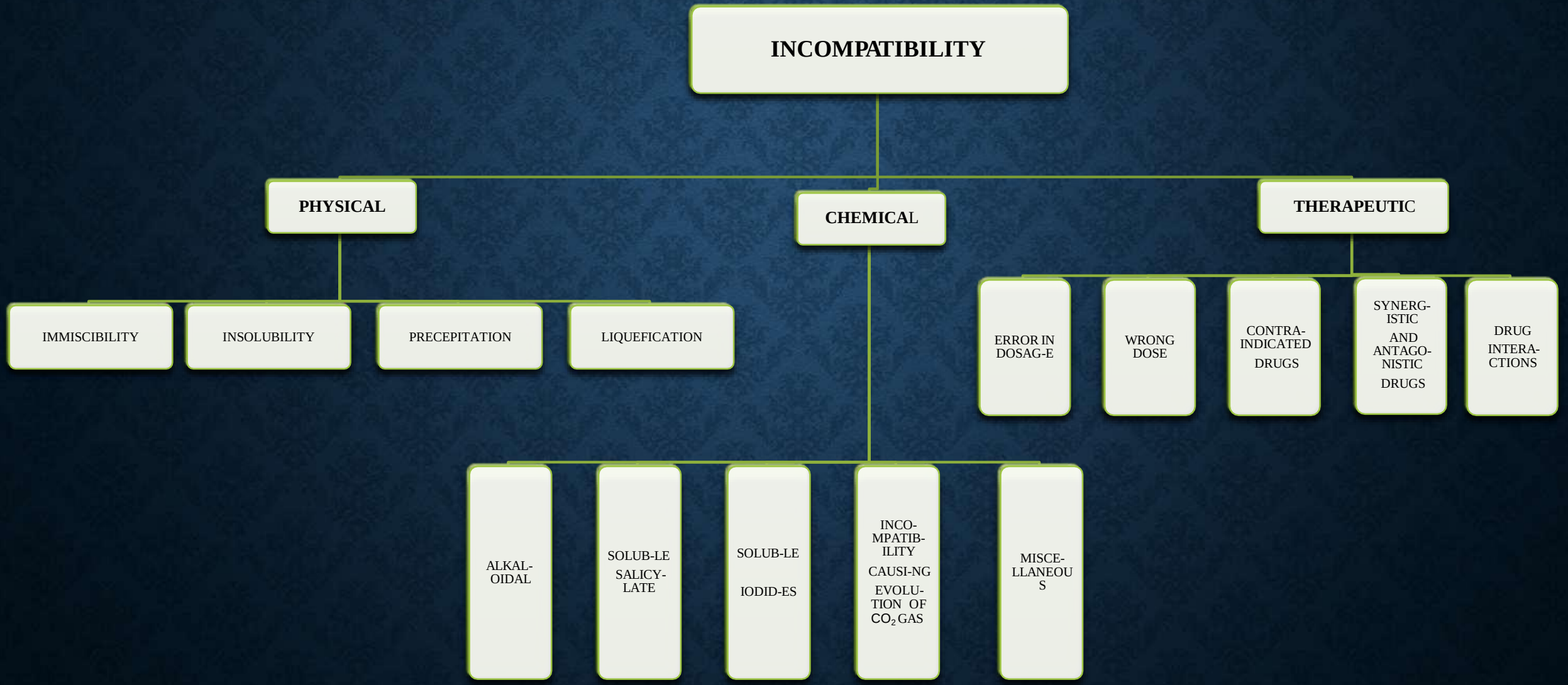
DRUG INCOMPATIBILITY

Prepared By
Prof. Ritesh Ramesh Popat
Asst. Prof.
Department of Pharmaceutics
Dr. Rajendra Gode College of Pharmacy,
Buldhana Road, Malkapur, 443101

- Incompatibility occurs as a result of mixing of two or more antagonistic substance and an undesirable product is formed which may affect the safety, efficacy and appearance of the pharmaceutical preparation.
- In other words, the incompatibility includes the interaction of a drug with another drug or of a drug with additives or adjuncts; dosage error etc.
- Incompatibility can occur during compounding ,dispensing , during formulation, manufacturing, packaging, or administration of drug
- The change may be detected by change in physical, chemical and therapeutic qualities of the medicines.

TYPE OF INCOMPATIBILITY




INCOMPATIBILITY
PHYSICAL
CHEMICAL
THERAPEUTIC
IMMISCIBILITY
INSOLUBILITY
PRECEPITATION
LIQUEFICATION
ALKAL-OIDAL
SOLUB-LE SALICY-LATE
SOLUB-LE IODID-ES
INCO-MPATIB-ILITY CAUSI-NG EVOLU-TION OF CO_2 GAS
MISCE-LLANEOUS
ERROR IN DOSAG-E
WRONG DOSE
CONTRA-INDICATED DRUGS
SYNERG-ISTIC AND ANTAGO-NISTIC DRUGS
DRUG INTERA-CTIONS

PHYSICAL INCOMPATIBILITY

- **When two or more two substance are combined together, a physical change takes place and an acceptable product is formed.**

Reason of physical incompatibility:-

- Immisibility
- Insolubility
- Precipitate formation
- Liquefaction of solid material

Examples of physical incompatibilities:-

1. Immiscibility :- Oil and water are immiscible with each other. They can be made miscible by emulsification.
2. Insolubility :- Insolubility is the ability of material to dissolve in a particular solvent system. Wetting agent, suspending agent etc. may used to solubilize the drug .
3. Precipitation :- If a drug in solution is insoluble in a solvent, may be precipitate. It can be overcome by vigorous stirring along with admixing of other agents.
4. Liquefaction :- When certain low M.P. solids are mixed toether, a liquid or solid mass is produced called eutectic mixture and the process is liquefication.

CHEMICAL INCOMPATIBILITY

- Chemical incompatibility may be a result of chemical interactions between the ingredient of a prescription, thus a toxic or inactive product may formed.

Reason of chemical incompatibility:-

- **oxidation –reduction**
- **Acid – base hydrolysis**
- **Combination reaction**

Examples of Chemical Incompatibility

1. Alkaloidal Incompatibility :-

Alkaloidal salt with tannin - Alkaloid salt + Drug containing tannin

↓

tannates of alkaloid

(separate as diffusible salt)

2. Soluble Salicylates Incompatibility:-

soluble salicyclates with ferric salt – ferric salt + sodium salicyclate

↓

ferric salicyclate

(liberate as indiffusible precipitates)

3. Soluble Iodides Incompatibility :-

Oxidation of iodides with potassium chlorate – Soluble iodide + Potassium chlorate

↓

Free Iodine

4. Chemical incompatibility with evolution of CO2 :-

bismuth subnitrate and sodium bicarbonate - Bismuth subnitrate + sodium bicarbonate

↓water

CO2 is liberate

5. Miscellaneous Chemical Incompatibility:-

Soluble barbiturates with ammonium bromide – Soluble barbiturate + Ammonium bromide

↓water

Barbitone

(Indiffusible precipitate)

THERAPEUTIC INCOMPATIBILITY

- Therapeutic incompatibility may be a result of prescribing certain dru to a patient with the intention to produce a specific deree of pharmacological action, but the nature or intensity of the action produced is different from that intended by the prescriber.

Reason of Therapeutic Incompatibility

- ✓ Error in dosage
- ✓ Wrong drug or dosage form
- ✓ Contra –indicated drug
- ✓ Synergistic drug
- ✓ Antagonistic drug
- ✓ Drug interaction

Example of Therapeutic Incompatibility

1. Error in dosage:- It occurs during writing or interpreting the prescription.

Ex. Rx

Codeine phosphate 0.5g

This is an example of an over dosage. The intention of the physician may be to prescribe 5mg and yet prescribed 500 mg.

2. Wrong drug or dosage form :- It occur in similar names drugs.

Ex. Prednisone and Prednisolone

Digoxin and Digitoxin

3. Contra –indicated drug :- Certain drugs are contra-indicated in a particular disease or a particular patient who are allergic to it.

Ex. Corticosteroids –Patient having peptic ulcer

Barbiturates & Morphine – Asthamatic Patient

4. Synergistic drug :- When two drugs are prescribed together ,they tend to increase the activity of each other ,This is known as synergism .

Ex. Penicillin & Streptomycin –Increase the activity of antibiotics

5. Antagonistic drug :- When the two drugs having the opposing pharmacological effects are prescribed together , this is known as antagonism.

Ex. Acetyl salicyclic acid & Probencid – In treatment of gout

6. Drug interaction :- The effect of one drug is altered by the another drug.

Ex. Rx

Tetracycline hydrochloride 250 mg

Tetracycline capsule should not taken with milk because calcium present in milk inactivates it.

Thank you