JRG College of Pharmacy

JRG COLLEGE OF PHARMACY

UNIVERSITY SOLVED QUESTION WITH ANSWER

Year : 2023-24

Subject : PHARMACEUTICS-I

Subject Code : BP103T

Subject In-Charge : Mr. Pankaj Kumar Rout, Ms. Monali Padhi, Ms. Adyasha Senapati

Registration No:

Total Number of Page: (1)

Course: B.Pharm
SUB_CODE: 23PBP103

1st Semester (Regular) Examination: 2023-24

SUBJECT NAME: PHARMACEUTICS- I

BRANCH:

Max Time: 3 Hours

Max Marks: 75

Sitting: 1st 10.00 AM to 1.00 PM

Q Code A014

Medium of Writing: English

The figures in the right-hand margin indicate marks.

Q 1 Objective Type (Answer All) (10 x 2 Marks)

a) Mention the usefulness of Pharmacopoeia
b) Write the reasons to convert drug to dosage forms.
c) How posology is important for a pharmacist?
d) Mention the effects of paratonic solutions in body fluid
e) Give some examples of bulk powder in pharmaceuticals.
f) Mention the methods to reduce the sedimentation rate in suspension
g) How suppositories are better than tablets?
h) Differentiate between paste and cream.
i) When mouthwashes are used?
j) How displacement value is important?

Q 2 Short Answer Questions (Answer any Seven out of Nine) (7 x 5 Marks)

a) Elaborate the salient features of latest Indian Pharmacopoeia.
b) Classify solid dosage forms with suitable examples. Is it solid dosage form is better than liquids? Justify
c) What are prescription errors? Suggest methods to minimize the prescription errors.
d) What are different methods used to enhance the solubility of drug? Mention the advantages of liquid dosage forms
e) Explain stability problems in emulsion and suggest methods to overcome it
f) Elaborate various methods of preparation of suppositories
g) Discuss about excipients used in semi solid dosage forms.
h) Develop Pharmaceutical syrup and mention its advantages.
i) Describe the preparation of Eardrops and Nasal drops.

Part- II (Answer Any Two)

Long Answer Questions

Q 3 Elaborate the Factors influencing determining the dose of a drug (1 X 10 Marks)

Q 4 Describe different types of pharmaceutical incompatibilities with suitable examples. (1 X 10 Marks)

Q 5 Explain mechanisms and factors influencing dermal penetration of drugs (1 X 10 Marks)

1st semester Regular 2023-2024 Examination

B. Pharm.

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(a)

A→ Pharmacopoeia Provides official standards for drug quality, purity, strength and dosage forms. it serves as a legal and scientific reference for Pharmacists and manufactures

(b)

A→ To ensure accurate dosing.
To improve patient compliance and drug stability

(c)

A→ Posology helps a Pharmacist determine the correct based on age, weight and condition, ensuring safe and effective treatment

(d)

Paratonic solution can cause cell shrinkage or swelling, affecting drug absorption and causing irritation or cell damage

(e)

example.
Oral rehydration salt (ORS), talcum powder, tooth Powders.

(f)

- Increase viscosity using suspending agent.
- Reduce particle size through micronization.

(g)

useful for unconscious or vomiting patients.

Bypass first - pass metabolism for better drug bioavailability.

(h)

Paste	Cream
→ Thick semisolid preparation	→ Soft semi-solid preparation
→ Provides, protective & absorptive action	→ Provides soothening and moisturizing action.
Ex → zinc oxide paste	Ex - cold cream.

(i)

Mouthwashes are used for:

(i) Oral hygiene
(ii) treating mouth infection or after dental procedure.

(j) It helps in calculating the correct amount of base needed when preparing suppositories containg active ingredient.

20) Indian Pharmacopoeia

→ Indian Pharmacopoeia Is a official book standard for drugs to define identity, purity and strength, for drugs that are. manufacture, imported and distributed in India.

→ Indian pharmacopoeia is maintained by IPC

→ It's is head office is Graziabad (UP)

→ Indian pharmacopoeia is published by NISCAIR

Indian pharmacopoian commision (IPC)

→ Ipc is an autonomous organisation which fonds under Ministry of Health and family welfare department. which Saids standard for all the drugs that are manufacture, consumed & sold in india.

NISCAIR

→ It is known as National institue of science communicat on & information Resources. Located in New Delhi India.

History of Indian Pharmacopoeia

→ In the independence days British Pharmacopeia is used in India.

→ In 1946 Govt. of India issue Indiapharcopoian list committe under the chairmanship Let Dr R.N chopra

→ In 1948 Govt. of India appointed an Indian pharmacopian committe to Prepare Indian Pharmacopoeia.

Edition	Year	Addendum	Volumes	monographs
1st	1955	addendum 1960	2	986
2nd	1966	addendum 1975	3	890
3rd	1985	addendum 1989 addendum 1991	2	261
4th	1996	addendum 2000 addendum 2002	3	1149 208
5th	2007	addendum 2008	3	271
6th	2010	addendum 2012	3	52
7th	2014	addendum 2015 addendum 2016	4	577
8th	2018	addendum 2019	4	220

(b)

Classification

Tablets.

e.g - Paracetamol

Capsules

e-g - Amoxicillin

Powders

e.g - ORS

Granules

e.g - Effervescent granules

Suppository

e.g - Glycerin Suppositories

Justification

Better stability - Less prone to microbial growth

Accurate dosing: Precise and consistent dose.

convenient. Handling: easy to store and transport

Patient compliance: Tasteless forms increase acceptability.

(C) Sources of Error in Prescription

(1) Abbreviations
(2) Name of the drug
(3) Strength of Preparation
(4) Dosage form of the drug i.e prescribed.
(5) Dose
(6) Instruction for the patient
(7) Incompatability

(1) Abbreviations

→ Abbreviations present a problem in understanding parts of the Prescription order.

→ Extreme care should be taken by a Pharmacist in interpreting the Abbreviations.

→ Pharmacist should not guess the meaning of Abbreviations.

(2) Name of the drug

→ There are certain drugs whose name look or sound like those of other like.

ex→ Some of the example of such drugs are
Digitoxin. & Digoxin

(3) Strength of Preparation

→ The strength of Preparation should be stated by the prescribe

→ It is essential when various strengths of a product available in the market.

(A) Dasage form of the drug that prescribed

→ many medicine are available in more than in 1 dosage form like as liquid, tablet, capsule etc.

(B) Dose

→ usually high on low dasage should be discussed with the prescriben.

(6) instruction for the patient

→ instruction for the patient which are given in the prescription are incomplete on

→ Quality of the drug to be taken for that frequency, Timing of Administration, Root of administration should be clearly given in the prescription to avoid confusion.

(7) incompatabilities

→ It is essential to check that there are no pharmaceutical or therapeutic incompatabilites in prescribed preparation and different medicines prescribed for the same patient do not interact with each other.

(d) Solubility enhancement techniques

(1) pH change
(2) Co-solvent
(3) Particle size reduction
(4) Solid dispersion
(5) hydrotrophy method
(6) complexation

(1) pH change

→ A solubility of poorly soluble drug d'e either weak base or weak acid may altered by adjusting the pH of the solution.

Eg→ Addition of Buffer to the formulation.

2) Co-solvent

→ It is a technique to increase the solubility of poorly soluble drug in a liquid.

→ By using co-solvent we can increase the

solubility of Poorly soluble drug

ex→ Procien glycon.

(3) particle size reduction

→ The solubility of a product is also depend on a particle size so, by decreasing the particle size we can increase the solubility of product.

(A) Solid dispersion

→ In solid dispersion a poorly soluble drug dispersed in a highly soluble said hydrophilic matrix which enhance the solubility.

(5) Hydrotrophy method

→ In this method by adding large amount of secondary solute to increase the aqoeous solubility of water insoluble drug

ex→ solubility of theophiline with sodium benzoate.

(6) complexation - cheatate

→ It is a process of association of two or more molecules to form a non-bonded entity.

→ It is used to improve bioabilibility of Poorly soluble drug

ex: cheatats

Advantages of Liquid dosage form -

→ It is easier to swallow.
→ It is cheap to produce (economical).
→ more satisfactory & convient to use:
→ Suitable for childs & old people.
→ It reduce gastric irritation.
→ The drug in this solution is uniformly distributed.

(e) STABILITY of Emmulsion:-

↳ The following changes usally occuros which affects the stability of emulsion.

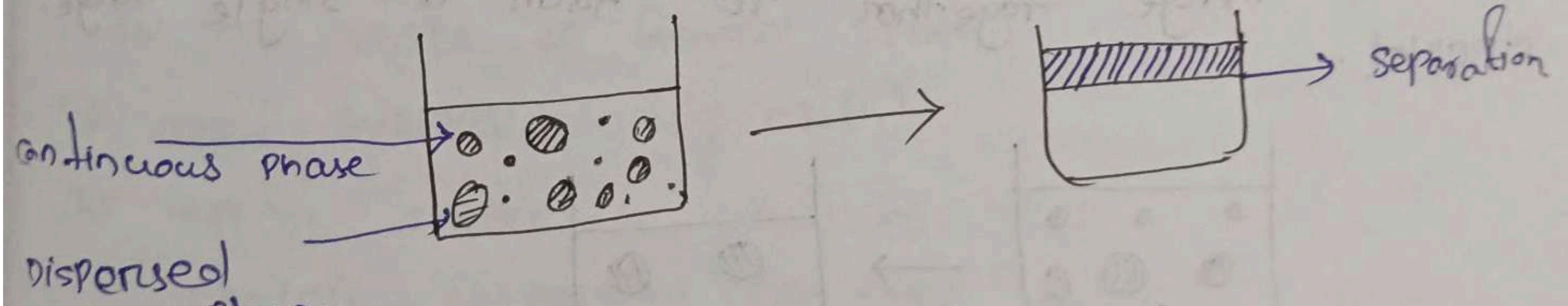
- Cracking
- Creaming
- Phase inversion
- Coalescence

CRACKING :-

↳ Cracking means the separation of two layers/phase of emulsion (dispersed phase and Continuous phase.)

↳ Cracking may be occurs due to:

- Addition of wrong emulsifying agent
- Growth of micro organism.
- Change in temperature.

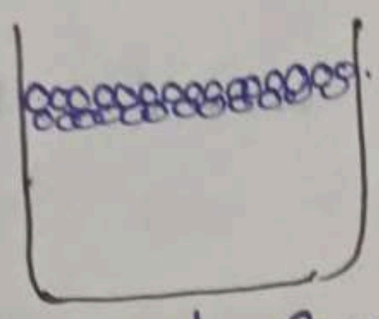


CREAMING :-

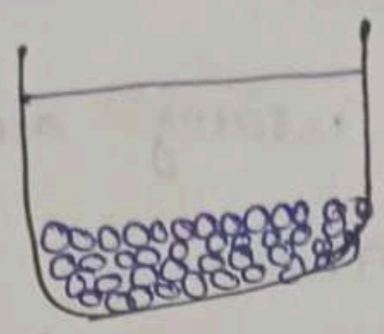
↳ Creaming Can be defined as upword or downword movement of dispersed phase (dispersed globales) to form a thick layer at Surface or bottom of the emulsion.

↳ O/w Emulsion - upword Creaming

↳ w/o Emulsion - Down word Creaming



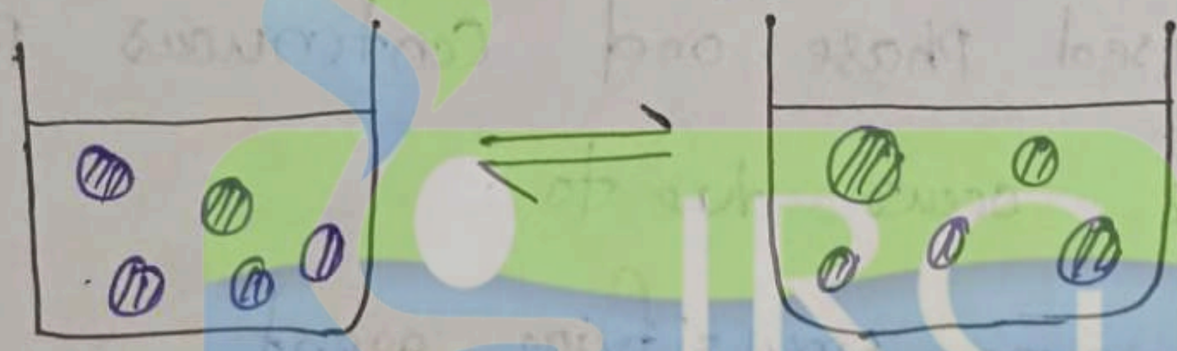
upword Creaming
O/w Emulsion



(w/o Emulsion)
Down word creaming

PHASE INVESION:-

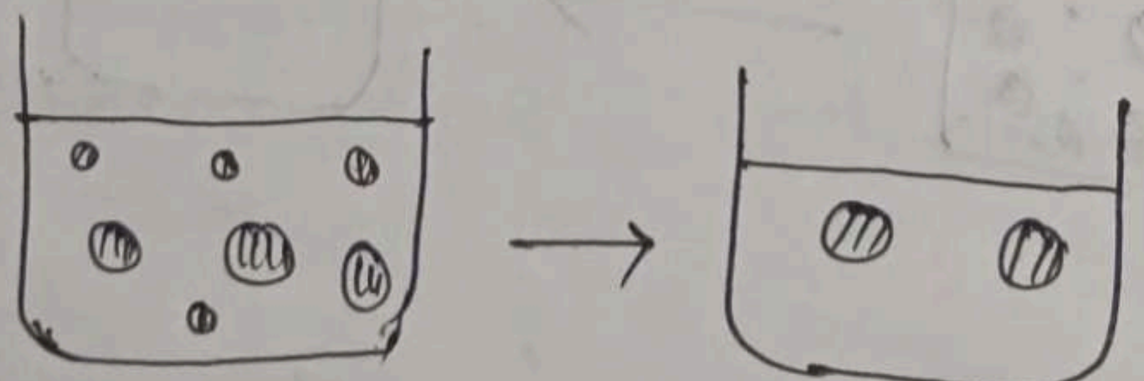
↳ Phase inversion is simply defined as Conversion O/w Emulsion into w/o Emulsion. or vice versa (w/o Emulsion into O/w)



(O/w Emulsion) (w/o Emulsion)

COALESCENCE:-

Coalescence is the process in which two or more droplets merge together to form a single large droplet.



METHODS TO OVERCOME THE STABILITY PROBLEMS:

↳ Selection of proper emulsifying agent.

↳ By increasing the viscosity of the emulsion

(F) Method of Preparation of suppository

→ It depends on the ~~time~~ types & intent used but the most common methods are

(1) Hand Rolling method
(2) Cold compression method
(3) Hot / Fusion method.

(1) Hand Rolling method

→ It is the oldest & simplest method of suppository method or may be used when only a few suppository are to be prepared in a cocoa butter base.

→ This method is less common & it typically used for small batch or compounding Pharmacy.

→ It involves manualy, shaping the suppository mixture in a special hand held moulds

→ A plastic like mass is prepared by triturating cocoa butter & Active ~~lod~~ ingredients in a mortar

→ The mass is form in a bulk in the pan then rolled into a uniformed cylinder with a large spatula or small flat board on a pill tile.

→ The cylinder is then cut into appropiate number of pieces which are rolled on 1 end to produce a conical shape

→ This method is simple or economical but it is very time consuming & rarely used method.

(2) Cold compression method

→ Heating is not required.

→ on small scale suppository is prepared in mortar ..... but in large scale it is prepared in compression machine. it essential to maintain ~~acceptive~~ Aseptic condition through out the process to prevent contamination.

→ It is the method of preparing suppository from a mixed mass of grated suppository base & medicament which forced into a special compression mould

HOT FUSSION Process

→ It involvest 1st melting the suppositary base and dissolving the drug in the mealted base.

→ The mixture is removed from the heat and poured into a suppositary mould.

→ When the mixture has set / congealed the suppositary are remove from the mould the fusion method can be used with all type of suppositary preparation and must be used in most of them

→ suppositary are generally made from solid ingredient and drug which are measured by weight.

→ When they are mixed and poured into suppositary mould.

→ cavity they occupy a volume.

→ Since the component are measured by weight but compound by volume density calculation and mould calibration are required to provide accurate dose.

→

(g) Excipient which is used in semi-solid dosage form

→ These are those excipients which are used in the formulation semi-solid dosage form

(1) semi-solid Base

→ These are the most important excipients in which the drug (API) & other excipients are mixed to form semi-solid dosage form

→ It is mainly responsible for release and absorption of drugs.

Ideal properties of bases

→ They should be compactable with skin pH and the pH of drug.

→ They should non-irritant and non-sensitising

→ It should be made like that it release medicaments easily at the sites of absorption.

→ It should have good stability

(1) TYPES OF Bases

(1) oleaginous base

(2) Emulsifying base

(3) water soluble base:

(1) Oleaginous Base

→ These are mainly organic bases which is made UPOF fats and oils

→ These are water insoluble or hydrophobic in nature

→ These are greasy, sticky & non-washable

ex→ White petrolium jelly, liquid paraffin gel

(2) Emulsifying bases

→ It forms w/o and o/w emulsion.

w/o emulsion base

→ water in oil type, these are hydrophobic in nature it is difficult to wash.

o/w emulsion base

→ Oil in water type, these are water soluble, water absorble & water washable in nature.

(3) Water soluble base

→ these are non-sticky, as they are oil free & they show complete solubility in water.

ex→ PEGs (Polythene ethelene onlycol)

(2) Anti-oxidants

→ These are those substance which are used to prevent oxidatio

n

ex→ Ascorbic Acid.

(3) Vehicles

→ These are the solvent ~~the so~~ which is used for preparation.

ex→ Water, ethanol, Phenol.

(A) Buffers

-These are those substance which are mainly used to prevent the change in PH

ex→ Sod. citrate, Sod. Acetate.

(5) Preservative

→ These are these substances which are mainly used to prevent microbial growth.

ex→ Benzoic acid, Ethyl hydroxide Benzoate.

(6) Humectants

→ These are those substances which are used to retain water & keep hydrated.

→ These are hydroscopic in nature.

ex→ Glycerin, propylene glycols, Sorbitol etc.

7) Permeation ephancers

These are those substance which are used to increase the rate of penetration or absorption of drug through skin

ex → methanol, Acetone, oleic acid etc.

(h)

Pharmaceutical syrup:

A pharmaceutical syrup is a conc. sweet, aqueous solution that contains medicinal substance. It may be medicated or non medicated.

Example.

Paracetamol syrup

Contains paracetamol as the active ingredient.

Other ingredients: sucrose, preservatives, flavor, color, purified water.

Preparation steps

(i) Dissolve the drug in minimum quantity of water or suitable solvent.

(ii) Add sucrose or sugar base to make the syrup base.

(iii) Add preservatives like sodium benzoate.

(iv) Incorporate flavors and colon for patient acceptability

(v) Make up the volume with Purified water & filter

Advantages

(1) Pleasant taste for pediatric and geriatric patients.

(2) Easy to swallow

(3) Uniform drug distribution.

(4) Quick onset of action due to liquid form.

(i)

Preparation of ear drops

- Drug selection :- choose suitable drug.
- Solution preparation :- Dissolve in sterile solvent. adjust PH.
- Sterilization :- sterilize solution and containers.
- Filling :- fill into sterile dropper bottles.
- Labelling - Label as 'For ear use only'.

Preparation of Nasal drops

- Drug selection :- choose suitable drug
- Solution Preparation :- Dissolve in sterile water. adjust pH and isotonicity
- Sterilization :- sterilize solution and containers
- filling :- fill into sterile dropper bottles
- Labelling :- Label as For Nasal use only.

(3) Posology is a branch of medical science that deals with dose or quantity of drugs which can be administered by the patient to get desired Pharmacological action.

→ The dose of the drug can not be fixed very easily as it depends on various factors i.e - Age, sex, administration.

Different of POSOLOGY

→ AGE
→ SEX
→ Body weight
→ IDIOSYMCRASY
→ Root of administration
→ Time of administration
→ Presence of disease
→ Accumulation.
→ Additive effect
→ Tachyphylaxis
→ Synergism
→ Antagonism

→ Tolerance
→ Metabolic distrubance
→ emontional factors.

AGE

→ The pharmaceutical effect of many drug changes with age.

→ New born babies are generally more sensitive towards some drugs because of their immature state of liver functions through with drugs are eliminated from body.

→ ALSO some elder patients are more sensitive to some drug like 'hypnotics' which may produce confusion state blw them.

→

SEX

Some times effect of drug is not same in women as in men.

- Special care should be taken while given the drug in state of menstruation, pregnancy and location.

→ Alcohol and Nachotic drugs (morphine & barbi- barbiturates must be avoid during pregnancy because it can have a harmful effect on babies.

Body weight

→ The average dose that is decided for a drug is for baby weight blw 50-100 kg.

→ However this dose is not applied in case of absent

Patient, children and very weak (Malnourished Patient).

→ It should be calculated according to body weight.

ROUTE OF ADMINISTRATION

→ Intravenous dose are always smaller than oral & topical doses because they are directly administered in blood.

Time of administration

→ Presence of food in the stomach always delays the absorption of drug in compose to empty stomach.

→ But it should be noticed that effectiveness of a drug is not depend upon taking before or after meal.

→ Iron, arsenic contining drugs prefered after the meal while antacid like drug given before the meal.

Environmental factors

condition OF disease also affect the pharmaceutical effect of a drug such as steptomycin produce toxic effect on liver

patient because their kidney function is not working properly and streptomycin is those type of drug that excreated through kidney.

presence of disease :-

presence of disease also affect the pharmacutical effect of a drug such as streptomycin produce toxic effect on liver patient because their kidney function is not working ~~because their~~ properly and streptomycin through kidney.

Accumulation

→ Some drugs produces the toxics effect. If it is repeatadly administed for a long time.

Additive effect

→ When two or more drugs Administer together there effect is equivalent ~~two~~ through their indivisual Pharmacological action. This Phenomenon is called as additive effect.

~~To~~ Antagonism

→ when the action of one drug is opposed by the other drug on the same Physiological system is known as drug Antagonism.

→ The use of Antagonistic response two drug is valuable in the treatment of poisonic.

Eg: Milk of magnesia is given is acid poisonic.

Tolerance

→ Some times higher dose of a drug is required to Produce a given response but previously less dose was required.

→ ⊕ The drug Tolerance is two types.

→ which is Produce by oral and parental administration of the drug

Pseudo Tolerance

→ Which is Produce only to the oral root of Administration.

Synergism

→ When desired theraputic result needed is difficult to achieve with single drop at that time two or more drugs are used in the combination form for increasing therapeutic action these phenomenon is called as synergism.

Tachyphylaxis

→ When some drugs Administen repeatadly as short interval the same receptor get LOCK or blocked OF pharmacological response to that drug decreased response can't be reversed by increasing the dose all these phenomenon is called Tachyphylaxis (Acutollerance)

4. PHARMACEUTICAL INCOMPATABILITY:

↳ when two or more ingredients are mixed together to prepare a medicine and undesired change takes place which affect physical, chemical and therapeutic properties of medicament then the phenomenon is termed incompatability.

↳ Incompatabilities are usally unintentional.

Incompatabilities may occur during:

↳ Compounding
↳ formulation
↳ manufacturing
↳ packaging
↳ dispensing
↳ storage
↳ Administration

Incompatability can affect:-

↳ safty of medicament
↳ Efficacy of product
↳ Appearance of medicine
↳ purpose of medicament

TYPES of pharmaceutical Incompatabilities:-

1. physical incompatabilities
2. Chemical "
3. Therapeutic "

PHYSICAL INCOMPATABILITY:-

↳ when two or more than two substance are combined together and a physical change takes place which results in the formation of an unacceptable product Then this phenomenon is known as physical incompatability.

- Physical incompatability involves interaction between two or more substances which leads to change in colour, taste. viscocity or appearance of the product.
- The changes that occurs due to physical incompatability are usally visible and can be corrected by taking proper action.

CORRECTION of PHYSICAL incompatability:-

- Changing the order of mixing.
- Emulsification
- Addition of suppending agent
- change in the form of ingredient.
- Adolition or substitution of a therapeutically inactive substance.

~~PHYSICAL~~ EXAMPLE of PHYSICAL Compatability:-

- Immiscibility.
- Insolubility
- preparation
- Liquefaction

IMMISCIBILITY:-

- Oil and water are immiscible with each other, but they can be made miscible by emulsification.

Example:-

- caster oil - 15 ml
- water - 60 ml

make an Emulsion.

Now in the above preparation caster oil is immiscible with water. to overcomes this incompatability an emulsifying agent is used to make a good Emulsion.

INSOLUBICITY:-

Insolubicity takes place when a drug is involve in a perticular solvent

Example:- Ephedrine sulphate - 0.25 gm
menthol - 0.2 ml
liquid paraffin - 30 ml

Now in the above prescription ephedrine sulphate is not soluble in liquid paraffin but anhydrous ephedrine is soluble in it. Hence ephedrine sulphate is substituted with anhydrous ephedrine in the above prescription to make a clear solution.

PRECIPITATION:-

A drug in a solution may be precipitated. if it is insoluble in the solvent in which it is added

Example:- ↳ Resins are insoluble in water. when it is added in the water it gets precipitated.

↳ It can be prevented by adding a suitable thickening agent.

LIQUEFACTION:-

When two or more solid having low melting point are mixed then get converted into liquid.

Example:- ↳ It medicaments containing menthol, thymol, Camphor phenol etc. mixed together. they gets converted into liquid.

↳ To prevent liquefaction - ingredients should be either dispensed separately or may be mixed with enough quantity absorbent powder

CHEMICAL INCOMPATABILITY:-

- Chemical incompatability is the result or change in chemical properties of two or more ingredients due to chemical reaction occurs between them.
- Chemical incompatability result in the formation of a toxic or inactive dosage form.
- If the chemical reaction between ingredients takes place immediately then it is termed as immediate incompatabilities.
- If the chemical reaction takes place over a period of time then it is termed as delayed incompatabilities.

CHEMICAL INCompatabilities often occur Due to:-

- oxidation - Reduction.
- Acid - Base hydrolysis.
- Combination reaction
- pH range

These reaction can be noticed by precipitation, decomposition colour change, explosion.

TYPES OF Chemical incompatabilities:-

Tolerated:- In tolerated incompatabilities, we change the order of mixing or diluted the substance to overcome the chemical reaction between ingredients.

Adjusted:- In adjusted incompatabilities. we directly add or remove a substance to overcomes the chemical reaction bet" ingredients.

THERAPEUTIC INCOMPATABILITIES:-

↳ Therapeutic incompatability may be the result of prescribing certain drug to the patient with the intension to procedure a specific degree of action but the nature or intensity of the action produced is different from that intended by prescribers.

causes of Therapeutic incompatabilities:-

It may be occur due to

↳ overdose/ Improper dose of a Single drug.

↳ Improper dosage form

↳ Contraindicated drug

↳ Synergistic and Antagonistic drugs.

Example of overdose:-

Codeine Phosphate ..... 0.5 gm

Direction for Pharmacist

↳ make powder

↳ Send such to Powder

↳ 1 dose to be taken at bed time.

↳ In the above prescription, physician write 500mg (0.5 gm) instead to 5 mg of Codeine Phophate.

Example of drug interaction:-

Tetracycline Hydrochloride 250mg

Direction for Pharmacist

↳ make Capsule, send such to Capsule.

↳ Take 1 Capsules every 6 hours with milk.

Now in the above prescription dose is alright but the direction is wrong. tetracycline should not be given with because, the Calcium that present in milk inactivated the action of tetracycline.

(5)

Dermal penetration of drugs

→ It is the phenomenon through which drug absorb into the blood through topical root (externally)

mechanism

→ It is based on the process of diffussion.

→ Diffussion is the process in which drug particles move from higher conc. to lower conc. across conc. gradients

→ Diffusion is based on the ~~fick fast 1 first law~~

Fick's First laws

→ According to it the rate of diffusion of solution (drug) molecules through a barrier is proportionay to the conc. gradiant.

$$J = -D \frac{dc}{dx}$$

J = Rate of diffusion

- D = Diffusion coefficient

dC = change in conc.

dx = change in position.

$\frac{dC}{dx}$ = conc. gradiant

Diffusion coefficient

→ Diffusion coefficient- is the amount of a particular substance that diffuses across a unit area in one second under the influence of a gradiant of 1 unit

Part-II

Factor influsing dermal penetating drug

→ These are the factor which may affect the permission slass penetation of drugs.

→ They are classiffied in to two types,

(i) Biological factor

(ii) Physio-chemical factor.

(i) Biological factor

These are those factors which are related to body and affect the penetration.

- Skin condition
- Skin ~~change~~ age
- Blood flow
- Resonay skin sites
- Skin metabollism
- Skin hydration.

Skin condition

- There are various skin related factors which may affect the drug permession.

ex→ Age, diseases, climate, Injury.

→ Absorption is greater in yung skin then old.

→ injured skin have great peretration.

Skin age

→ It is an important factor in drug absorption like children have more absorption of drug then adult to skin.

→ Drug absorption also tends to give more toxic effect in children. compair to adults.

Blood Flow

→ If the blood flow reduces then it increases the penetration of drug. As it increases the time of contact. so blood absorb more drug.

Resonal Skin sites

→ It is also deperds on the thickness of skin which various different placess,

Ex Thiner skin, like face. facial skin have more penetration than thicker skin like pam & feet.

skin metabolism

→ skin have the ability to metabolise some drugs which may affect the drugs efficacy and absorption.

→ skin metabolises about high percent of topically applied blood

ex - steroidal hormones.

skin hydration

→ It is a condition when skin get saturated with water [water observe in to the skin) and skin tissue, ; sweat softenss, wrinkels',

→ so it increases the rate of drug perummission.

(ii) Physio chemical factor

These are those factors which has related to physical & chemical properties of drugs.

(1) Temp. & pH
(2) Diffusion coffecient
(3) Drug concentration
(4) partion coefficient
(5) Molecular size & shape.
(6) percutaneous enhancers.

Temp. & pH

→ Temp. is directly proportional to drug penetration, so if temp. increases the penetration

→ unionised molecule have great penetration.

→ Drugs with pH blw 4.59 - 5.0 mostly below 5 are based for drug penetration through skin

(2) Diffusion coefficient

→ It mainly depends on nature and state of the drug.

(3) Drug concentration

→ It mainly based on the conc. ~~gradient~~ gradient variant

→ High conc. of drugs have more penetration than the normal conc.

(4) Partion coefficient

→ It is tell us about the nature of drugs either it is lipophilic or hydrophilic.

→ lipophilic drugs have more penetration.

(5) Molecule size & shape

→ The smaller the size of molecules the greater will be it's penetration rate.

(6) Percutaneous Enhancers

→ These are those substances which are basically used to enhance the absorption of drugs through skin

Ex→ Acetone.

in semi-solid dosage form