



# LAB 1

# PHARMACEUTICAL TECHNOLOGY

## SOLUTIONS

Stage: 3/ 1st course

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• **Solutions** are liquid pharmaceutical preparation contain one or more chemical substance dissolved in one or more suitable solvent to produce single phase system.

## **Preparation methods of solutions**

1. Simple solution method
2. Chemical reactions
3. Simple solution with sterilizations such as ophthalmic solution, anticoagulant ,irrigating solution , physiological solution
4. Extraction.

# challenges

Problems that may occur during preparation of solutions and the ways for overcome them :

1. To increase the rate of solubility of substances, we can reduce the **particle size** by using mortar and pestle.
2. If we have **two solvents** in the same prescriptions, we dissolve the solid substance in the solvent that have more ability to dissolve it (e.g. alcohol, water).
3. If we have material that has **very fine particle**, we must not use stirrer in dissolving it because particles will adhere around stirrer, so we use circulating of the beaker instead of stirrer .
4. If there is **liberation of any gas** , the container must be opened , without using stopper , until liberation of gas .
5. Some times we need to increase the solubility by certain method ex. pH , complexation ....

# General procedure of the preparation of simple solution

1-Weigh the solid ingredient and put it in beaker

2-Subtract the volume of liquid ingredients (if present from  $\frac{3}{4}$  of the final volume of prescription.

3-dissolve the solid ingredients in the remaining amount of the vehicle

4-Add the liquid ingredient

5-Convert the content of the beaker into the measuring cylinder and complete the volume up to the required amount by addition of the vehicle

6-transfer the content of the measuring cylinder to a wide mouth bottle and put suitable label (label of external use is pink ,while label for internal use is white )

# Carminative mixture for infants

**Rx**

Sodium bicarbonate 0.06 g

Aromatic spirit of ammonia 0.06 ml

Compound tincture of cardamom 0.12 ml

Glycerin 0.3 ml

Peppermint water Q.S 4 ml

Ft. mist

Mitt 40 ml

## Calculations

Factor =  $40/4 = 10$

Sod. bicar. =  $0.06 \times 10 = 0.6 \text{ gm}$

Ar.sp .of ammonia =  $0.06 \times 10 = 0.6 \text{ ml}$

Comp. tr. of cardamom =  $0.12 \times 10 = 1.2 \text{ ml}$

Glycerin =  $0.3 \text{ ml} \times 10 = 3 \text{ ml}$

Peppermint water =  $4 \times 10 = 40 \text{ ml}$

$40 \times \frac{3}{4} = 30 \text{ ml}$

$30 \text{ ml} - (0.6 + 1.2 + 3 \text{ ml}) = 25.2 \text{ ml}$  (starting volume of water)

## Procedure

1. Dissolve 0.6 g sod. bicarb in 25.2 ml of pepp. water in beaker.
2. Add 0.6 ml of Ar. spirit of ammonia ,1.2 ml of comp. tr. cardamom and 3 ml of glycerin to the content of the beaker .
3. Convert the content of the beaker into measuring cylinder and complete the volume up to 40 ml by addition of pepp. water .
4. Transfer the content of the measuring cylinder to a wide mouth bottle and put a suitable label.

Note:-

Glycerin act as soothing and sweetening agent

## Carminative mixture for adult (H.W)

Rx

Sodium bicarbonate gr vii

Aromatic spirit of ammonia ℥ xv

Compound tincture of cardamom ℥ x

Strong tincture of ginger ℥ i

Peppermint water Q.S ℥

Fit. mist

Mitt ℥ iv

Sig. ℥ ss t.i.d p.c.

- **Sodium bicarb** .act as gastric antacid.
- **Aromatic spirit** act as carminative agent.
- **Comp.tr. of cardamom** act as flavoring agent
- **Tr. of ginger** act as flavoring and antispasmodic agent.
- **Pepp. water** act as flavoring and carminative agent  
,also it is diluting agent used as solvent.

**note** Strong tr. of ginger which is used in carminative mixture of adult must not added for infant because it is strong for use to infant.



# Aqueous iodine solution (lugals sol)

## Rx

Iodine		50 g
Potassium iodide		100 g
Purified water	Q.S	1000 ml
Sig 0.3 ml diluted with milk or water three times daily		

## Procedure

1. Dissolve iodine in concentrated KI solution
2. Shake well until iodine dissolved
3. Complete the volume with purified water to 1000 ml

## Notes:

- Lugals sol. used internally in treatment of thyrotoxicosis (preoperative treatment ) and in hypothyroidism
- We dissolve the iodine in KI instead of water because the iodine has more solubility in KI than in water.

# Report requirements

- 1) Name of experiment
- 2) Date
- 3) Name of students
- 4) materials and equipment
- 5) Calculations
- 6) Procedure of preparation
- 7) The medical uses
- 8) Role each ingredient in Rx

A collection of various colorful pills and capsules scattered on a dark surface. The pills are in various colors including green, yellow, pink, blue, and white. Some are capsules, some are tablets. The background is dark and slightly blurred, making the pills stand out. The text "THANK YOU" is overlaid in the center in a bold, black, sans-serif font.

**THANK YOU**

## Diluted iodine solution

Rx

Iodine	0.5g
KI	1g
DW QS	100ml

Dissolve 1g KI in 20ml DW

Dissolve 0.5g iodine

Complete to 100ml with DW