

Symp - General Principles

According to Indian Pharmacopoeia, syrups are defined as oral liquids which are sweet, viscous & often contain added flavouring & colouring agents, in which medicaments are incorporated.

The concentrated of sugar syrup is 66.7%. w/w dissolve sucrose has high tendency to crystallize. To prevent co-solvents such as glycerine sorbitol & propylene glycol. Sometimes, artificial sweetening agents such as cellulose gum, such as Tragacanth Gum are added to the preparation of syrup.

Syrup may contain a small concentration of syrup alcohol as preservative or as co-solvent to incorporate flavouring agents. Syrup are such do not require any preservative. Due to high concentration of sucrose, syrups possess high osmotic pressure when the osmotic pressure is high, bacteria, fungi & mould can't grow in preparation.

Advantages

- 1) Syrups retards oxidation of drugs because sucrose itself get hydrolysed to dextrose & fructose which are reduced sugar.
- 2) Syrups are sweet in taste, therefore, bitter taste of drugs can

be reduced.

3) Syrups prevent microbial decomposition of many vegetable drugs.

Disadvantages

- 1) On continuous continuous intake, it promote dental decay because of sucrose because of sucrose is a very good supplement for bacterial growth.
- 2) Aluminium salts are not add to syrup as incompatible with sucrose similarly Acidic drugs are not added to syrup as they crystallize sucrose.

Classification

- Syrups are such do not any medical value but its used as vehicle for drug medicinal medication.
- Syrups can be classified into 2 type.

Medicated Syrups: Pure drugs are extract of medicinal plant are added to syrup.

e.g.) Paracetamol Syrup I.P

Salbutamol Syrup I.P

Promethazine Hydrochloride Syrup I.P,

Flavour Syrups: Aromatic or flavoured substances are added to the syrup.

e.g.) Orange syrup B.P, Lemon syrup B.P

Formulation :

S. No	Ingredient Type	Example
1.	Vehicle Solvent	water; glycerine
2.	Sweetening agent	→ sucrose → saccharin
3.	Colouring Agents	Amarnath (Red colour) Tartrazine (Yellow colour) Saffron (orange colour)
4.	Flavouring agents	Tincture of Ginger & lemon
5.	Preservatives	Sodium Benzoate, Propyls Methyl Parabin
6.	Stabilizers	Glycerine, Sorbital

Storage.

- The syrup should be stored in a well-dried, completely filled and closed bottle in a cool dark place. Temp. 25°C [Required]
- The bottle may be colourless, ~~Amber coloured.~~
~~[Brownish colour]~~



Experiment 2 Simple Syrup I.P.

Aim:

To prepare and submit 10 gm of simple syrup I.P.

Theory

Simple syrup I.P. is a concentrated or nearly saturated solution of sucrose in purified water. The concentration of sucrose is 66.7%. w/v. The solubility of sucrose in water is observed at such a high concentration. It increases the rate of dissolution. Simple syrup is sweet in taste and normally used to mask the bitter taste of drugs.

Procedure

- 1) 100 ml of empty beakers is weighed and weight is noted.
- 2) The required quantity of sucrose is weighed in the same beakers.
- 3) Required quantity of water is placed in the beakers.
- 4) The sucrose is dissolved by heating with occasional stirring.

Sl No	Ingredient	Official formula	Working formula
1.	sucrose	66.7 gm	66.7 gm
2.	Purified water	100 ml	100 ml.

Simple Syrup I.P [10ml]	
composition -	sach 10 ml contain
sucrose 6.67 g	mfg date. 1/11/2023
purified water quantity	Exp Date - 31/10/2025
Dose - 10 ml	
Storage - Store in airtight light resistant container at room temperature.	Batch No: 01
	College of Pharmacy JSSATE, noida

Precautions

- Over heating of sugar solution should be avoided because it leads to caramalization of sugars.
- After cooling purified water is added to make up the required volume of the syrup. The prepared syrup is transferred to light resistant container.
- The bottle is capped, labelled and polished and submit it.

Composition

Sucrose - ~~6.67 g~~ 6.67 g
water

Category

Agent sweetening ~~agent~~ of vehicle

Storage

Store in a tightly closed container in a cool place.

Ferrous Phosphate Syrup

Expt. No. Experiment 3

Date 01/11/23
Page No. 12

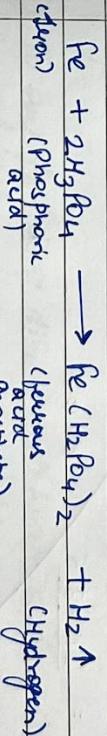
Experiment - 3 Ferrous Phosphate Syrup I.P

Aim. To prepare and submit 200ml of ferrous phosphate syrup I.P

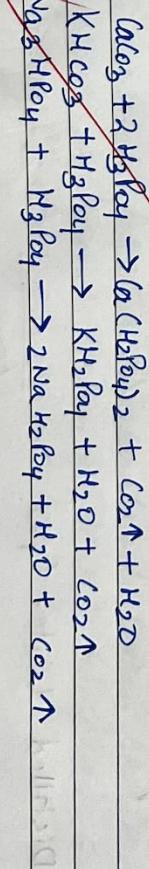
Ingredients	Official Formula	Working formula
Iron Fehling's	4.3g	0.080gm
Phosphoric acid	80mL	1.6gm
Calcium carbonate	13.6g	0.272gm
Potassium Bicarbonate	1g	0.02gm
Sodium Phosphate	1g	0.02gm
Cochineal	3.5g	0.07gm
Sucrose	700g	14gm
Orange flavour water	50mL	1mL
Distilled water	1000mL	20mL

Theory

Diet with insufficient supply of iron leads to a condition called anaemia. In such cases, iron supplement, ferrous phosphate syrup is prescribed along with electrolytes, calcium, potassium and sodium. These are electrolytes which overcome the deficiency which is most common in anaemic condition. Ferrous phosphate is prepared by a reaction between iron and phosphoric acid. The equation of the reaction is as follows:



Electrolytes are also supplied in their phosphate form. The reactions between phosphoric acid and calcium carbonate, potassium carbonate, sodium phosphate are as follows



The reactions do not complete as this stage, because the amount of phosphoric acid is insufficient.

Calculations

$$\text{Iron Filling} - \frac{20 \times 4.3}{1000} = 0.086 \text{ gm}$$

$$\text{Phosphoric acid} - \frac{80 \times 2.0}{1000} = 1.6 \text{ gm}$$

$$\text{Sodium bicarbonate} - \frac{20 \times 13.6}{1000} = 0.272 \text{ gm}$$

$$\text{Potassium bicarbonate} - \frac{20 \times 1}{1000} = 0.02 \text{ gm}$$

$$\text{Sodium phosphate} - \frac{20 \times 1}{1000} = 0.02 \text{ gm}$$

~~$$\text{Cochineal} = \frac{20 \times 3.5}{1000} = 0.07$$~~

~~$$\text{Sulphur} = \frac{20 \times 700}{1000} = 14 \text{ gm}$$~~

~~$$\text{Orange flavour water} = \frac{20 \times 50}{1000} = 1 \text{ m}$$~~

~~$$\text{Distilled water (q.s)} = \frac{20 \times 1000}{1000} = 20 \text{ ml}$$~~

the excess of phosphoric acid available with iron and phosphoric complex the reaction. Saponin extract of cochineal acts as a colouring agent it also acts as a masking agent to mask colour change of the preparation, if any, due to oxidation of constituents during storage. Orange flavour water is used as flavouring agent. Since saponin essentially really strong (carbolic) it is used in the preparation as a major ingredient it acts a swelling agent.

Procedure depending on the quality of preparation to be submitted working formula is tabulated.

1) Phosphoric acid is diluted with water. This is divided into 2 portions.

2) To one portion of diluted sulphuric acid is added. The contents are heated on the water bath until saponin dissolves. Heating on water bath minimizes evaporation of water. If water bath is water is taken from a solid mass is formed which does not dissolve in water.

3) Sodium bicarbonate, potassium bicarbonate and sodium phosphate are dissolved in second portion of diluted phosphoric acid in a beaker by stirring. CO_2 is evolved.

4) The contents of second step is mixed with third step. The reactions are completed. The resulting solution

contains impurities like iron carbide and carbon which are derived from iron solution. The contents are filtered to remove these unwanted substances.

- 3) Colouring agents is extracted from cochineal by heating it 15 min with water ~~boiled~~ water.
- 4) Sugar is added to the above coloured decocation. Heating is continued until sugar completely dissolve.
- 5) The hot syrup containing colouring agent is cooled. Shained washed with water to produce a specified volume.
- 6) The coloured syrup is now mixed with mixture containing ferrous acid phosphate, calcium acid phosphate, potassium acid phosphate, Sodium acid phosphate.
- 7) To the above mixture Orange flavoured water is added and final volume is adjusted with water.
- 8) The contents are transferred into tightly closed container.
- 9) The container is capped, polished, labelled and submitted.

Category Iron, calcium, sodium and potassium supplement.

Dose - 2 - 5 ml

~~Storage~~ Store in a tightly container in a cool place.~~Report~~ 20ml of ferrous phosphate syrup I.P was submitted.

FERROUS PHOSPHATE SYRUP I.P [20ml]

Category: Iron calcium Sodium and Potassium supplement

Dose - 2 to 8ml

Storage - "Store in tightly close container"

At temp - 25°C

Mfg - 08/11/23

M.D- Aryan Chachra
Aryan Shukla
College of Pharmacy, JSSOTEN

Exp - 07/11/25

Batch No - 01

Elixirs

According to IP Elixirs are defined as clear, sweet and aromatic hydro alcoholic preparation intended for oral use.

S. No.	Ingredients	Examples
1.	Vehicle / solvent	water, glycerine
2.	sweetening agent	sucrose, saccharin
3.	colouring agent	Aniseed (Red), Tangerine (yellow) coisin (Green)
4.	flavouring agent	Tincture of lemon, Tincture of ginger
5.	Preservatives	Sodium benzoate, methyl Paraben + propyl paraben
6.	Stabilizers	Citric acid, EOTN

Most of the elixirs presently available do not contain any sweetening agent and may not contain glycerine and syrup. Others to increase the solubility of medicaments or to impart sweet taste Propylene glycol often used to substitute glycerine and alcohol. Elixirs are relatively stable and can be easily prepared. The alcohol content in elixirs varies from 4 to 40%. Hence additional preservatives are not necessary because elixirs can such have self-preserving property. Elixirs can flavouring agents and colouring agents.

Classification Elixirs are classified into two types namely medicament elixir and flavoured elixirs.

Medicament Elixirs These elixirs contain potent drugs or drugs extract. Examples include piperazine citrate elixir, colacillin elixir, sodium valporate elixir etc., vascana elixir etc.

Flavoured elixirs These elixirs contain any medicament and are used as vehicles. Example include aromatic elixir, compound bengaldehyde elixir etc.

Note Diluted elixirs (paediatric elixirs) cannot be stored for longer period as they are susceptible for degradation.

Containers Elixirs are filled in tightly-closed and light-resistant containers.

Storage Elixirs are stored in cool place.

Calculations

~~Ibuprofen : $\frac{20 \times 27}{1000} = 0.418 \text{ gm}$~~

~~Ibuprofen : $\frac{20 \times 27}{1000} = 0.418 \text{ gm}$~~

~~Amaranth Solution - $\frac{20 \times 2}{1000} = 0.04 \text{ m.l}$~~

~~Chloroform spirit = $\frac{20 \times 20}{1000} = 0.4 \text{ m.l}$~~

~~Concentrated Raspberry juice - $\frac{25 \times 20}{1000} = 0.5 \text{ m.l}$~~

~~Milk 9.5% - $\frac{100 \times 20}{1000} = 2 \text{ m.l}$~~

~~Propylene Glycol - $\frac{100 \times 20}{1000} = 2 \text{ m.l}$~~

~~Invert sugar - $\frac{20 \times 27.5}{1000} = 5.5 \text{ m.l}$~~

~~Glycine 0.5% - $\frac{20 \times 1000}{1000} = 2 \text{ m.l}$~~

Theory Ibuprofen Pediatric elixir is used as analgesic and antipyretic for children. Ibuprofen is sparingly soluble in water and freely soluble in alcohol; therefore alcohol is used to dissolve the drug. Propylene glycol acts as co-solvent to increase the solubility. Glycerine acts as the vehicle and also increases the viscosity of the preparation. Chloroform spirit acts as a preservative. Concentrated raspberry juice containing agent, amaranth solution acts as a masking agent.

Ibuprofen possess bitter taste, therefore invert syrup is used as a sweetening agent to mask the taste of drug. However chloroform spirit, concentrated raspberry juice and glycerin also help in masking the taste of drug. Syrup syrup won't be used as a sweetening agent because sucrose is insoluble in water. Alcohol.

Procedure
Depending on the quality of preparation to be submitted the working formula is calculated

1. Milk, propylene glycol, chloroform spirit and concentrated raspberry juice are mixed in the same sequence.

Ingredients	official formula	working formula
Ibuprofen	24g	0.48gm
Amaranth solution	2ml	0.04ml
Chloroform spirit	20ml	0.4ml
Concentrated Raspberry juice	25ml	0.5ml
Syrup 95%.	100ml	2ml
Ibuprofen Elixer	100ml	2ml
Infant Syrup	275ml	5.5ml
Syrup Q.S	1000 ml	20ml

Ibuprofen
Ibuprofen semipermeable membrane

2. Required quantity of ~~paracetamol~~ is taken into a beaker and the above mixture is added slowly to dissolve ibuprofen semipermeably

3. Invert Syrup, Amaranth solutions are added to the above mixture and mixed well, finally the volume is made up to the required mark using glycerin.

4. The preparation is then transferred into light resistant container.

5. The container is capped, labeled, polished & submitted.

Category Analgesic, Antipyretic

Dose: Child upto 1 Year - 5ml
1-5 year - 1.5 ml
1-5 year - 10ml

Storage: Store in a well closed container on a cool place.

IBUPROFEN PEDIATRIC ELIXIR I.P.

Category Analgesic, Antipyretic

Date: Child upto 1 year - 5ml
1-5 year - 10ml

Mfg Date - 22/11/23
Exp Date - 21/11/25

Mfg By: Devan Chahua
Rajesh Shukla

Storage: Store in a well sealed container in a cool place

JSSA TERN

Teacher's Signature _____

Ingredients	Official formula	Working formula
Citric acid monohydrate water	2.5g	0.5gm
Concentrated anise water	10ml	0.2ml
Amaranth sohn	15ml	0.3ml
Methsform spirit	60ml	1.2ml
Syrup ac	1000ml	20ml
<u>Calculations</u>		
Citric acid monohydrate - $\frac{2.5 \times 20}{1000}$	= 0.5gm	
concentrate anise water - $\frac{10 \times 20}{1000}$	= 0.2ml	
Amaranth sohn = $\frac{15 \times 20}{1000}$	= 0.3ml	
Methsform spirit = $\frac{60 \times 20}{1000}$	= 1.2ml	
Simple syrup ac = $\frac{1000 \times 20}{1000}$ = 20ml		

Object: To prepare and submit 20 ml of simple linctus BPC.

Simple Linctus BPC

Theory Simple Linctus is used to demulcent in the treatment of rough, sensitised anise water is a mild expectorant with a flavouring property. Citric acid monohydrate as a preservative, flavouring agent and mild astringent. Methsform spirit act as preservative and flavouring agent. Amaranth sohn act as a releasing agent. Simple syrup act as a demulcent and sweetening agent.

Procedure Depending on the quantity of preparation to be submitted, the working formula is calculated.

- Weighted quantity of citric acid monohydrate is dissolved in 3/4th quantity of simple syrup.
- Concentrated anise water, Amaranth sohn and methsform spirit are added to the syrup containing citric acid with intermittent mixing.
- Finally the volume is made up to the required level with simple syrup.
- The preparation is then transferred into light-resistant container.

5. The container is capped, labelled, polished and submitted.

Category Demulcent in the treatment of cough.

Dose 5ml

Simple Linctus B.P.C

Batch No-01

Mfg Date - 29/11/23

Exp Date - 28/11/25

Storage store in a well closed container in a cool place

Advice for Patients To be supplied and swallowed slowly undiluted

Category - Demulcent in the treatment of cough

Dose - 5ml

Storage: Store in a well closed container in a cool place

Mfg By - Aryan Chackra
Aryan Shukla

TSS College of Pharmacy
TSS ATEN

Report: 20ml of spirit Linctus B.P.C was submitted.

29/11/23

Advice for Patient: To be stopped and swallowed slowly undiluted

Experiment - 6Grease with soap solution.

Ingredients	Official formula	Working formula
grease	500 ml	10 ml
vegetable oil	180 g	3.6 g
Potassium hydroxide	42 g	0.84 g
Raw fat water (cgs)	1000 ml	20 ml

Ques To prepare and submit 20ml of grease with soap solution
 Ans To prepare and submit 20ml of grease with soap solution
 Grease : Grease
 Grease itself is soluble in water to the extent of 2%, but
 glycerol containing 50% of grease is very effective
 disinfectant because it kills microorganisms as it
 possesses bactericidal and detergent properties. Solubility
 of grease in water can be enhanced using soap. Soaps
 are surfactants, which form micelles above critical
 micelle concentration (CMC). At this stage grease gets
 relatively entrapped inside spherical micelles. Thus
 solubility of grease is increased. The role of
 micelles of soap is to enhance solubility of grease.

Test	Observation	Inference
• Agar drops of our mixture +	• Remain completely miscible	• saponification completed, stopped heating
A few drops of water	• Remain immiscible	+ • continue heating to complete saponification

Soap is prepared by saponification reaction between alkali & vegetable oil (fatty acids). The vegetable oil may be cottonseed, coconut oil, palm kernel oil etc. The alkaline soln used is potassium hydroxide solution alternatively sodium hydroxide soln may be used.

Vessel with soap solution	
composition: 50% v/v cresol	Batch No- 01
category: Disinfectant Storage: Store in a well container in a cool place. Auxiliary label: To be used on inanimate objects only.	Mfg Date- Exp Date- Mfg By - Aryan TSS college of Pharmacy ISSATEN

calculations:

$$\text{vessel} = \frac{20 \times 500}{1000} = 10 \text{ ml}$$

$$\text{Vegetable oil} = \frac{180 \times 20}{1000} = \frac{36}{10} = 3.6 \text{ ml}$$

$$\text{Potassium hydroxide} = \frac{20 \times 42}{1000} = 0.84 \text{ g}$$

$$\text{Purified water} = \frac{20 \times 1000}{1000} = 20 \text{ ml}$$

Procedure Depending upon the quantity of preparation to be submitted the working formula is calculated.

- Potassium hydroxide is dissolved in $\frac{1}{4}$ th quantity of purified water.
- Vegetable oil is added to the above alkali soln.
- The mixture is heated on water bath while mixing the contents thoroughly.
- Heating is continued until completion of saponification reaction. Prolonged heating is necessary to complete saponification. This can be confirmed by the following miscibility test.
- Vessel is added and mixed thoroughly.
- Sufficient purified water is added to produce the required volume.
- The preparation is then transferred to light resistant container.
- The container is capped, labelled, polished & submitted.

composition: 50% v/v cresol

category: Disinfectant

Storage: Store in a well container in a cool place.

Auxiliary label: To be used on inanimate objects only.

Report: 20mls vessel with soap soln was submitted.

Classification of Suspension

→ based on type of application

Suspension	Example
Oral suspension	MgCO_3 suspension
Vaginal suspension	<i>Streptomyces</i> suspension
Ophthalmic suspension	Indomethacin suspension
External application	Talcumic suspension

→ based on the nature of vehicle

Suspension type	Example
Flourinated suspension	Tonus toxoid suspension
Deflourinated suspension	Porraine penicillin G suspension

Suspension General Properties

Suspensions are biphasic liquid dosage form in which finely divided solid particle are dispersed in liquid vehicles. The solid particles are known as dispersed phase whereas the liquid vehicles is known as continuous phase. Suspensions are usually administered orally, parentally and externally.

General properties of suspensions

1. Finely divided solid particles should not settle readily.
2. Suspended or gentle shaking of the container it possible settle.
3. The suspension particle should not form a hard cake.
4. The viscosity should be in such a way so as to allow easy mixing of the contents.
5. The suspension should be free from gritty particle.

Advantages

1. Suspensions can improve chemical stability of certain drug.
2. Drug as suspension exhibits higher rate of bioavailability than other dosage forms such as solution, suspension > capsule > compressed tablet > coated tablet
3. Suspensions can mask the unpleasant/bitter taste of drug.
E.g. chloramphenicol
4. Duration and onset of action can be controlled. E.g. Protamine Zinc - Insulin suspension.

- Disadvantages
1. Physical stability, sedimentation and coagulation can cause problems.

formulation of suspension

S.No	Type of ingredient	Examples
1.	Drug	Ammonium hydroxide gel, paracetamol
2.	Flocculating Agents	Electrolytes (NH_4Cl)
3.	Thickening Agents	Tragacanth, Sodium CMC
4.	Wetting Agents	Glycerine, tween
5.	Preservative	Sodium benzoate, methyl paraben + propyl paraben
6.	Colouring agent	Tartrazine, amaranth
7.	Sweetening agent	sucrose, saccharin
8.	Flavouring agent	Orange oil, lemon oil, banana flavor

2. It is bulky sufficient raw material must be taken during handling & transport.
3. It is difficult to formulate.
4. Unpleasant and disagreeable dose cannot be obtained unless suspensions are packed in most design form.

Formula-

Ingredients	Official formula	Working formula
Talamine	150g	2g
Zinc Oxide	50g	1g
Bentonite	30g	0.6g
Sodium Citrate	9g	0.19g
Liquid Phenol	5ml	0.1ml
Glycerine	30ml	0.6ml
Rose water	1000ml	20ml

Aim : To prepare and submit 20ml of talamine lotion IP.

Experiment - 7 Talamine lotion IP

Theory: Lotions are usually liquid suspension or emulsion form application to the skin with or without friction. lotions are applied to the skin using absorbent material such as cotton. Talamine lotion is used as topical protectant.

Talamine is zinc oxide with amount of phenol oxide, the powder is pink in colour and it is used as an astringent and protective agent for cleaning scaly from scabies, insect bite and other similar irritations. The pink colour helps disguise the presence of talons on the skin.

Zinc oxide is used as an astringent, reduces very little microbial action, the antimicrobial and astringent properties of zinc oxide is due to release of zinc which acts as a weak microbial agent. Bentonite is full buff powder. It is a natural mineral silicated aluminium silicate. It is insoluble in water but has good suspending properties. Hence it is used as a suspending agent. Sodium citrate maintains the pH which is limit appropriate to the skin. It also helps in suspending bentonite, phenol acts as preservative, antiseptic, local anaesthetic, glycerine is used as a humectant and emollient. Rose water gives perfume smell.

~~Procedure~~ Depending on the ~~existing~~ quality of preparation to be submitted the working formula is calculated:

<u>Salamine lotion IP</u>	
<u>Category</u> - Topical proctectant	<u>Batch No.</u> : 01
<u>Instruction</u> : The lotion can be applied	<u>Mfg Date</u> 03/01/24
<u>Storage</u> Store in a well closed container in a cool place, do not freeze.	<u>Exp Date</u> 03/01/26
<u>Auxiliary Label</u> : For external use only Shake well before use.	M&B By - Aryan Chachra JCS College of Pharmacy, JSSA TEN

1. Salamine, Zincoxide and Bentonite are triturated with the solution. Take in about $\frac{3}{4}$ m quantity of rose water.
2. Liquidified Phenac and Glycerine are added to the above mixture.
3. Sufficient rose water is added to produce required volume.
4. The preparation is agitated to ensure uniform distribution.
5. The preparation is then transferred to a bottle.
6. The bottle is capped, labelled, polished and submitted.

Salamine Topical Proctectant.
Instruction The lotion can be applied.
Storage Store in a well closed container in a cool place.
Auxiliary Label For External use only
 Shake well before use.

Report: 2 ml of salamine lotion IP was submitted

Formula

Ingredients	Official formula	Working formula
Light magnesium oxide	52.5g	1.05g
Sodium Hydroxide	15.0g	0.3g
Magnesium Sulphate	47.5g	0.95g
Chloroform	25ml	0.05ml
Purified water as	1000ml	20ml

Aim: To prepare and submit 20ml of magnesium hydroxide mixture BP.

~~dispersion: cream of Magnesia, Milk of magnesia~~

~~This cut bulk of magnesia is used as an antacid and laxative, according to its usage the dose changes. It is a suspension of magnesium hydroxide in water. It is also sometimes called as a mixture. Mixture is a general term used to indicate the preparation for oral administration.~~

$$\text{Light Magnesium oxide} = \frac{52.5 \times 20}{1000} = 1.05g$$

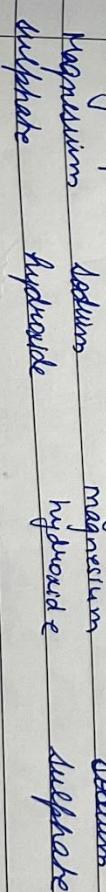
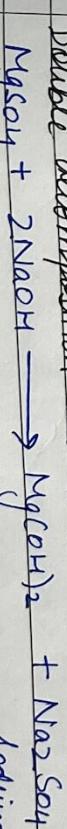
$$\text{Sodium hydroxide} = \frac{15 \times 20}{1000} = 0.3g$$

$$\text{Magnesium Sulphate} = \frac{47.5 \times 20}{1000} = 0.95g$$

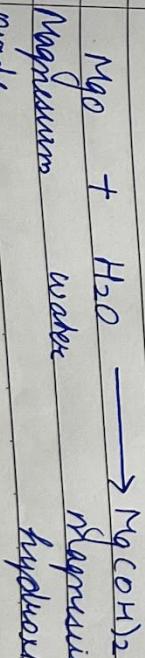
$$\text{Chloroform} = \frac{2.5 \times 20}{1000} = 0.05ml$$

~~Explained as follows:~~

~~Double decomposition Reaction:~~



$$\text{Purified water} = \frac{1000 \times 20}{1000} = 20ml.$$



Sulphate Test A few drops of washing is treated with few drops of barium chloride soln. If sulphate ions are present the following reactions take place.



Sulphate test reaction observation and inference are given in the following table.

Test	Observation	Inference	Test	Observation	Inference
A few drops of washing + a few drops of dil. HCl	No precipitate formed or taken to the above mixture	No SO_4^{2-} Sulphate ions are absent	A few drops of dil. HCl	Ppt dissolve on a clear soin	Sulphate ions are absent
a few drops of barium chloride reagent.	A precipitate formed	Barium sulphate is insoluble in water. The moisture must be removed from sulphate precipitates. Further it also causes ventilation problem at a lower pH.	White ppt. formed	Insoluble ppt.	Sulphate ion content remaining

$\text{Na}_2\text{SO}_4 \longrightarrow 2\text{Na}^+ + \text{SO}_4^{2-}$

Magnesium hydroxide prepared from magnesium sulphate is gelatinous, where as magnesium hydroxide prepared from magnesium oxide is heavy and very fast. Therefore magnesium hydroxide is prepared from ~~barium~~ magnesium sulphate and light magnesium oxide. The magnesium hydroxide used remains in colloidal condition for a longer time, without formation of clumps. Thus, the magnesium hydroxide preparation is much too viscous to prevent pouring from the container, not too thick to allow undersettling. After filtration the precipitate of magnesium hydroxide is washed several times with water to remove sulphate ions.

~~After thoroughly washing of the filtered water the pH of the final product is nearly 10.~~

~~Microform act as a preservative. In place of microform 0.2% methyl paraben or 0.125% sodium tungstate or a similar preservative can also be used. If glass containers to be used for supplying the formulation, 0.1% citric acid may be added to minimize the leakage of alkali from the glass container into milk of magnesia. In case of plastic containers, citric acid needed to be added.~~

Magnesium Hydroxide mixture B.P (20ml)	
Category: Antacid, Laxative	
Batch No: 01	
Mfg Date - 17/01/24	
Exp Date - 17/01/26	
Storage: Store in a tightly closed label > do not keep in a cool place	
Auxiliary label: Shake well before use	

Magnesium hydroxide mixture should not be stored in a cool place because freezing produces coagening of particles.

Dose - 5-10ml as Antacid
15-30ml as Laxative

~~Storage: Store in a tightly closed
label > do not keep in
a cool place~~

Mb By - Ryan Chandra
JSC College of Pharmacy
JSATE, Noida.

- Procedure Depending on the quantity of preparation to be submitted the working formula is calculated.
1. Sodium hydroxide is dissolved in purified water (15g. of total volume) in a mortar.
 2. Light magnesium oxide is added to the above. This is triturated to form a smooth cream, sufficient purified water is added to produce 25% volume of preparation.
 3. Magnesium sulphate is dissolved in another 25% volume of purified water and is placed into another mortar. A suspension of step 2 is transferred in a thin stream into "step 3" with continuous titration.
 4. The precipitate is allowed to settle, then the clear liquid is decanted and the precipitate is transferred into a beaker.
 5. The precipitate is washed with purified water several times until the precipitate is free from sulphate ions, which can be confirmed by sulphate test.
 6. The washed precipitate is mixed with purified water.
 7. The solution is dissolved in the above mixture.
 8. The volume is made up to the required quantity with purified water.
 9. The suspension is transferred into a tightly closed container.
 10. The container is capped, labelled, packed and submitted.
 11. The container is capped, labelled, packed and submitted.

Category : Antacid, Laxative

Dose - 5-10ml as antacid
15-30ml as laxative

Storage Store in a tightly closed container, so not keep in a cool place.

Auxiliary Label : Shake well before use.

Report : Magnesium Hydroxide mixture B.P 20ml was prepared and submitted

~~Shay~~ 17/1/24

Ingredients	Official Formula	Working Formula
Liquid Paraffin	60ml	1.2ml
Syrup	10ml	0.12 ml
Vanillin	5mg	0.12 mg
Alcohol	6ml	8ml
Water	150ml	

Experiment - 9

Liquid Paraffin Emulsion

Aim: To prepare and submit ²⁰ g of liquid paraffin emulsion.

$$\begin{aligned}
 \text{Syrup} &\rightarrow \frac{10 \times 20}{1000} = 0.2 \text{ ml} \\
 \text{Liquid paraffin} &\rightarrow \frac{60 \times 20}{1000} = 1.2 \text{ ml} \\
 \text{Syrup} &\rightarrow \frac{10 \times 20}{1000} = 0.2 \text{ ml}
 \end{aligned}$$

Calculations

$$\begin{aligned}
 \text{Theory:} \quad \text{Liquid paraffin is a mineral oil. Therefore primary emulsion formula- oil : water : sugar = 3 : 2 : 1. Alcohol is emulsifying agent. It produces oil type emulsion. Liquid paraffin is dispersed phase. Water is continuous phase. Syrup is sweetening agent. Vanillin is flavoring agent. Alcohol is used to disperse vanillin. Alcohol sol'n of vanillin is added at the end. Drop by drop with vigorous shaking, to prevent the precipitation of emulsifying agent (sugar) by the alcohol.
 \end{aligned}$$

Procedure:

- Measured required quantity of liquid paraffin in a dry measure. Transferred to the dry measure.
- Weigh required quantity of sugar. Placed sugar on liquid paraffin. Mixed gently to disperse.
- Immediately added required amount of water all at once. Triturated lightly and continuously in one direction. Until the mixture thickened then triturated vigorously to produce a thick cream. Continued the trituration for 3 min. to obtain stable emulsion.
- Added 4 ml of syrup to 7 ml water. Gradually added to the mixture with continuous trituration.
- Transferred to the measure.

6. Rinsed the pestle and mortar with 2 ml of water. Transferred to the measure.
7. Adjusted volume to 57.6 ml with water. Mixed well.
8. Added drop by drop. Transfer to the wide mouthed bottle.
9. Added drop by drop 2.4 ml of alcoholic soln of vanilla to the bottle with vigorous shaking. capped it. shake it.
10. Polished. Labelled. Wrapped. Dispensed.

Dose 8 to 30ml

Category Laxative

Auxiliary label shake well before use
store in a cool place.

Report 20ml of Liquid Paraffin Emulsion 20ml was prepared and submitted.

Powders - General Properties

Pharmaceutical powders is a homogenous mixture of finely divided drug or chemicals in a solid form.

Pharmaceutical powders are meant for internal and external use. The solid drugs are available in crystalline and amorphous form. The particle size of the powder plays an important role in physical, chemical and biological properties of dosage form. As the particle size of the powder decrease, the dissolution, absorption and therapeutic efficacy of drug increase.

Advantages

1. Powders are most stable than liquid dosage form against hydrolysis and oxidation.
2. chance of incompatibility are less compared to liquid dosage form.
3. large quantities of powder drugs can be easily administrated to the patient by dissolving or mixing drugs in a suitable liquid.
4. children and elderly patients cannot be swallow dosage form such as capsules and tablets. They can easily take powder drugs.
5. The onset of action of powdered drug is rapid as compared to other solid dosage form. For example, tablets.
6. It is convenient for physician to prepare the dose of powder medicament depending upon the need of the patient.
7. Powders are more economical and can be prepared extemporaneously as compared to other solid dosage forms, since no special machinery techniques are required.
8. Powders can be used both internally and externally.

Classification of Powders

Sl. No. Type / use

1. Bulk Powder for internal use
Rhubarb powder
2. Bulk Powder for external use
Dusting powder
3. Simple powder for internal use
Aspirin powder.
4. Compound powder for internal use
Oral rehydration salt
5. Powders enclosed in sachets
Sodium aminosalicylate

Example

Expt. No. _____

Date _____

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Disadvantages

1. Drugs having bitter, nauseous and unpleasant cannot be dispensed in powder form
2. Deliquescent (tendency to take water) and hygroscopic substances (tendency to absorb water) cannot be dispensed in powder form
3. Quantity less than loing cannot be weight conveniently by spatulation balance.

Method of Preparation

Powders can be prepared by the method such as spatulation, trituration, geometric division, sifting and tumbling.

Packing

If powders are required to be packed in individual doses (example ampoule - ~~method~~ mixture). In case of volatile oils, hypodermic needles, effervescent powders and emetic mixture double wrapping is used. In this case, an inner wax paper and a slightly bigger - rigid outer bond paper are jointly used if powders are required to be packed in a screw-topped wide mouthed glass bottle or self dispensing plastic container.

Teacher's Signature _____

Formulae:Experiment - 10
ORS Powder WHO RecommendationIngredientsOfficial formula
of litreWorking formula
of litre.

Aim: To prepare and submit ORS Powder formulation.

Sodium Chloride

26g

Glucose anhydrous

13.5g

Potassium chloride

1.5g

Trisodium citrate dehydrate

2.9g

Synonym: Low Osmolarity oral rehydration salts.

Theory: Oral rehydration salt (ORS) is the non-prescription name for a balanced glucose-electrolyte mixture, approved recommended and distributed by UNICEF and WHO as a drug for the treatment of clinical dehydration throughout the world. The formulation is prepared as a medicine with a total osmolarity of 245 m osmol/litre. This formulation has been included in the WHO model list of essential medicines.

Glucose facilitates the absorption of sodium (and hence water) as a 1:1 molar base in the small intestine. Sodium and Potassium are needed to replace the body loss of these essential ions during diarrhoea and vomiting. Sodium citrate corrects the acidosis that occur as a result of diarrhoea and vomiting.

Procedure The required quantities of powders as specified in the formula are weighed. The powders are mixed in a geometric ratio by gentle saturation, the powder is packed in double wrapped tissue paper and dispensed in plain labelled envelop.

Category for the treatment of dehydration due to diarrhoea for children & adults.

Storage Store in a cool dry place.

Direction Dissolve entire content of packet in one litre of drinking water.

Dose Infant - One litre over a period of 24 hrs.

Children - One litre over an 8 to 24 hrs period according to age.

Adults - drink freely as required.

Continue treatment until diarrhoea stops.

Auxiliary label: Discard remaining solⁿ after 24 hrs.

Report: ORS powder was formed and submitted