Practical Pharmaceutics 2

2nd year 4th level
**Mixtures**

**Definition:** The mixture is a liquid preparation intended for oral administration in which the drug or drugs are dissolved, suspended or dispersed in a suitable vehicle and generally several doses are contained in a bottle.

### 1. Potassium citrate and sodium bicarbonate mixture

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium citrate</td>
<td>0.1 gm</td>
</tr>
<tr>
<td>Sodium bicarbonate</td>
<td>0.75 gm</td>
</tr>
<tr>
<td>Syrup orange</td>
<td>1 ml</td>
</tr>
<tr>
<td>Chloroform water</td>
<td>0.2 ml</td>
</tr>
<tr>
<td>Dist. Water</td>
<td>to 10 ml</td>
</tr>
</tbody>
</table>

**Calculation**

Prepare 100 ml

Factor = \( \frac{100}{10} = 10 \)

**Therapeutic indication**

It is used as an alkalizer to make the urine alkaline and less acidic in inflammatory conditions of the bladder, to prevent crystaluria during long term treatment with suphanamides. (Bactrim® or Septrin®)

**Role of each ingredient**

- **Potassium citrate:** after absorption is metabolized and acts as urine less acidic.
- **Sodium bicarbonate:** decreases renal acidosis making the urine less acidic.
- **Syrup orange:** flavoring agent.
- **Chloroform water:** added as flavoring agent.
- **Dist. Water:** vehicle for the mixture.
Remarks

- Each 1 ml of this mixture provides 0.9 millimole of sodium and potassium ions which may be important in patients with electrolyte imbalance.
- Plenty of fluids taken orally must be recommended.
- In patient with severe UTI (urinary tract infection) a proper antibiotic should be used with this mixture.

Label

- Red or White
- Sig. 30 ml TID with amount of water

Procedure:

1. Dissolve Potassium citrate (1 gm) and Sodium bicarbonate (7.5 gm) in (50 ml) in Dist. Water in beaker.

2. Add Syrup orange (10 ml) and Chloroform water (2 ml).

3. Complete to the required final volume by addition of Dist. Water to (100 ml)

4. Pure the mixture in to the bottle and put the closure then adhere the label.
2. Potassium iodide mixture

\[ \text{Potassium iodide} \quad 0.15 \text{ gm} \\
\text{Sodium bicarbonate} \quad 0.15 \text{ gm} \\
\text{Syrup lemon} \quad 0.6 \text{ ml} \\
\text{Tr. liqurice} \quad 0.5 \text{ ml} \\
\text{Distill. Water} \quad \text{to} \quad 15 \text{ ml} \]

\[ \times 6.667 \]

Calculation
Prepare 100 ml
Factor = \(100 \div 15 = 6.667\)

Therapeutic indication
It used as expectorant cough mixture in the case of cough with sputum e.g. chronic bronchitis.

Role of each ingredient
\textbf{Potassium iodide}: is used as an expectorant agent.
Because the bronchial secretions are reflex increased by stimulation of gastric mucosa.

\textbf{Sodium bicarbonate}: has an expectorant effect and cause the mucous secretions less viscous.

\textbf{Syrup lemon}: flavoring agent.

\textbf{Tr. liqurice}: increases the secretions of upper respiratory tract.

\textbf{Dist. Water}: as a solvent and as a vehicle for the mixture.
Remarks
- The use of proper antibiotic for controlling the respiratory tract infection is recommended.
- Storage of the mixture for long periods is not desirable due to the formation of iodoform from the released free iodine.

Label
- ☐ Red or ☐ White
- Sig. 30 ml TID with amount of water

Procedure:
### 3. Atropine sulphate mixture

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Atropine sulphate</td>
<td>1 mg</td>
<td>20 gm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syrup lemon</td>
<td>0.5 ml</td>
<td>10 ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloroform water</td>
<td>0.1 ml</td>
<td>2 ml</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distill. Water</td>
<td>to 5 ml</td>
<td>To 100 ml</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Calculation**

Prepare 100 ml

Factor = $\frac{100}{5} = 20$

**Therapeutic indication**

It used as a smooth muscle relaxant in cause of pylorospasm in infant.

**Role of each ingredient**

- **Atropine sulphate**: is used as antispasmodic, it has relaxes the smooth muscles pyloric region, facilitating the passage of food and fluid through pylorus.
- **Syrup lemon**: flavoring agent and carminative.
- **Chloroform water**: flavoring and carminative properties.
- **Dist. Water**: as a solvent and as a vehicle for the mixture.

**Label**

- ☐ Red or ☐ White
- Sig. 15 ml TID before meals.

**Procedure:**
4. Acid mixture

\[ \text{Rx} \]

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>1.5 ml</td>
</tr>
<tr>
<td>Tr. Nux vomica</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>Glycerin pepsin</td>
<td>2 ml</td>
</tr>
<tr>
<td>Syrup orange</td>
<td>1.5 ml</td>
</tr>
<tr>
<td>Chloroform water</td>
<td>to 20 ml</td>
</tr>
</tbody>
</table>

\[ \times 5 \]

**Calculation**

Prepare 100 ml

Factor = 100 ÷ 20 = 5

**Therapeutic indication**

To increase the appetite in case of a chlorhydria.

**Role of each ingredient**

*Hydrochloric acid*: use to helps the digestion and increases the appetite.

That via HCl converts pepsinogen into pepsin.

*Tr. Nux vomica*: contains strychnine and acts as a bitter stomachic (i.e. increasing appetite).

*Glycerin pepsin*: contains pepsin and helps in digestive action.

*Syrup orange*: acts as flavoring agent.

*Chloroform water*: as a diluent for HCl and as a vehicle for the mixture and carminative action.

**Label**

- Red or White
- Sig. 15 ml BID before meals

**Procedure:**
5. Potassium iodide - ephedrine mixture

RX

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium iodide</td>
<td>0.25 gm</td>
<td>2.5 gm</td>
</tr>
<tr>
<td>Ephedrine HCl</td>
<td>10 mg</td>
<td>100 mg</td>
</tr>
<tr>
<td>Ammonium bicarbonate</td>
<td>0.1 gm</td>
<td>1 gm</td>
</tr>
<tr>
<td>Liquiric extract</td>
<td>0.5 ml</td>
<td>5 ml</td>
</tr>
<tr>
<td>Chloroform water</td>
<td>0.5 ml</td>
<td>5 ml</td>
</tr>
<tr>
<td>Distill. Water</td>
<td>to 10 ml</td>
<td>to 100 ml</td>
</tr>
</tbody>
</table>

Calculation

Prepare 100 ml
Factor = 100 ÷ 10 = 10

Therapeutic indication

It is used as an expectorant cough mixture in the case of chronic bronchitis.

Role of each ingredient

Potassium iodide: is used as an expectorant agent.
Ephedrine HCl: is used as bronchodilator and to reduce dyspea associated with bronchitis.
Ammomium bicarbonate: used as expectorant through irritation of mucosa (reflex action).
Liquiric extract: has a demulcent and expectorant, it also acts as a flavoring agent and reduces the unpleasant taste of solute.
Chloroform water: is added as flavoring agent
Dist. Water: as a solvent and as a vehicle for the mixture.

Label

- Red or White
- Sig. 15 ml TID after meals

Procedure:
6. Chloroquine sulphate mixture

\[\text{Rx}\]

Chloroquine sulphate \hspace{1cm} 0.3 gm
Sulfuric acid (dil.) \hspace{1cm} 1.0 ml
Syrup lemon \hspace{1cm} 4.0 ml
Distill. Water \hspace{1cm} to 20 ml

\[\times 5\]

Calculation

Prepare 100 ml
Factor= 100 ÷ 20 = 5
Free vehicle= 100-(5+20) =75 ml

Therapeutic indication

It used as anti-malarial mixture.

Role of each ingredient

Chloroquine sulphate: is active ingredient as the drug of choice for acute attack of malaria
Sulfuric acid (dil.): is used to help in dissolving Chloroquine sulphate.
Syrup lemon: used as a flavoring and sweeting agent and used to reduces the bitter taste of Chloroquine sulphate.
Dist. Water: as a solvent and as a vehicle for the mixture.

Procedure:

Label

- Red or White
- Sig. 30 ml TID
7. Whooping cough mixture

Р

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium iodide</td>
<td>50 mg</td>
</tr>
<tr>
<td>Potassium citrate</td>
<td>0.5 gm</td>
</tr>
<tr>
<td>Tr. Belladonna</td>
<td>1.0 ml</td>
</tr>
<tr>
<td>Syrup Tolu</td>
<td>2.0 ml</td>
</tr>
<tr>
<td>Aqua Distillata</td>
<td>to 20 ml</td>
</tr>
</tbody>
</table>

× 5

250 mg
2.5 gm
5 ml
10 ml
To 100 ml

Calculation
Prepare 100 ml
Factor = 100 ÷ 20 = 5

Therapeutic indication
It used as an expectorant-antispasmodic mixture in case of whooping cough.

Role of each ingredient
Potassium iodide: increases the bronchial secretions►expectoration.
Potassium citrate: acts as an expectorant by its osmotic action.
Tr. Belladonna: may produce a mild bronchodilator effect and may reduce respiratory distress.
Syrup Tolu: acts as a stimulating expectorant and as a flavoring agent.
Dist. Water: as a solvent and as a vehicle for the mixture.

Label
- Red or White
- Sig. 15 ml TID.

Procedure:
8. Sodium sulphate mixture

<table>
<thead>
<tr>
<th>Rx</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium sulphate</td>
<td>0.3 gm</td>
</tr>
<tr>
<td>Syrup ginger</td>
<td>1.2 ml</td>
</tr>
<tr>
<td>Aqua Distillata</td>
<td>to 20 ml</td>
</tr>
</tbody>
</table>

\[ \times 5 \]

**Calculation**
- Prepare 100 ml
- Factor = \( \frac{100}{20} = 5 \)

**Therapeutic indication**
- It is used as a purgative mixture in patients suffering from chronic constipation.

**Role of each ingredient**
- **Sodium sulphate**: increases the fluidity of the intestinal contents and helps in the expulsion of hard and dry stool.
- **Syrup ginger**: helps in masking the bitter and saline taste of sodium sulphate.
- **Dist. Water**: as a solvent and as a vehicle for the mixture.

**Label**
- [ ] Red or [ ] White
- Sig. 15 to 30 ml OD.

**Procedure:**

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**9. Alkaline saline mouth wash**

![Chemical formula]

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity (ml)</th>
<th>Result (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium chloride</td>
<td>2 gm</td>
<td>0.833 gm</td>
</tr>
<tr>
<td>Sodium bicarbonate</td>
<td>1 gm</td>
<td>0.417 gm</td>
</tr>
<tr>
<td>Amaranth solution</td>
<td>2 ml</td>
<td>0.8≈1 ml</td>
</tr>
<tr>
<td>Aqua Distillata (to)</td>
<td>240 ml</td>
<td>To 100 ml</td>
</tr>
</tbody>
</table>

**Calculation**

Prepare 100 ml

Factor = 100 ÷ 240 = 0.4167

**Therapeutic indication**

It used as a mouth wash for cleaning the oral cavity and to treat some diseases of oral mucous.

**Role of each ingredient**

- **Sodium chloride**: gives a “saline taste” to the solution. Also, it makes the solution isotonic and this will reduce mucosal irritation. Also, it helps in opposing the unpleasant taste of sod. bicarbonate.

- **Sodium bicarbonate**: being alkaline in nature, it helps dissolving mucous crusts.

- **Amaranth solution**: is used as a coloring agent i.e., giving a red color to the solution.

- **Dist. Water**: as a solvent and as a vehicle for the mixture.

**Label**

- ☐ Red or ☐ White

- Sig. take 10 ml of the mixture and rinse the oral cavity tid specially after meals.

**Procedure:**
10. Chlorhexidine mouth wash

\[ \text{\( \times 5 \)} \]

\[
\begin{align*}
\text{Chlorhexidine} & \quad 0.2 \text{ ml} \\
\text{Alcohol} & \quad 1.4 \text{ ml} \\
\text{Aqua Distillata} & \quad \text{to } 20 \text{ ml}
\end{align*}
\]

**Calculation**
- Prepare 100 ml
- Factor = \( \frac{100}{20} = 5 \)

**Therapeutic indication**
- It is used as a disinfectant mouth wash in cases of oral cavity inflammation.
- It may be diluted with equal volume of water and used as a disinfectant for skin.

**Role of each ingredient**
- **Chlorhexidine**: has a disinfectant property and it is effective against Gram +ve bacteria.
- **Alcohol**: is used as a solvent and a diluent’s for chlorhexidine.
  - Also it inhibits the growth of microorganism in the solution.
- **Dist. Water**: as a solvent and as a vehicle for the mouth wash solution.

**Label**
- \( \square \) Red or \( \square \) White
- **Sig.**: the solution should be used undiluted as a mouth wash solution tid – qid.

**Procedure:**
Pharmaceutics -2 (Practical)

11. Compound Sodium Chloride Mouth Wash

**Calculation**
Prepare 100 ml

**Therapeutic indication**
It used as a mouth wash in the inflammatory conditions of the oral cavity associated with mucosal salivary crusts.

**Role of each ingredient**
- **Sodium chloride**: is added to make the solution is hypertonic so that mucosal edema is reduced.
- **Sodium bicarbonate**: reduced the viscosity of the mucous secretion and helps in cleaning the oral cavity.
- **Peppermint water**: acts as a flavoring agent and helps in providing a feeling of “freshness” in the oral cavity.
- **Chloroform water**: has a flavoring property and gives a pleasant flavor to the solution.
- **Dist. Water**: as a solvent, diluent’s and as a vehicle for the mouth wash.

**Label**
- Red or White
- Sig. used as mouth wash bid. after each meal.

**Procedure:**
12. Detergent Mouth Wash

<table>
<thead>
<tr>
<th>Recipe</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boric acid</td>
<td>10 gm</td>
<td>5 gm</td>
</tr>
<tr>
<td>Sodium borate</td>
<td>10 gm</td>
<td>5 gm</td>
</tr>
<tr>
<td>Amaranth solution</td>
<td>10 ml</td>
<td>5 ml</td>
</tr>
<tr>
<td>Aqua Distillata</td>
<td>to 200 ml</td>
<td>To 100 ml</td>
</tr>
</tbody>
</table>

Calculation

Prepare 100 ml
Factor = 100 ÷ 200 = 0.5

Therapeutic indication

It used as a detergent mouth wash.

Role of each ingredient

Boric acid: has a mild local bacterostatic effect. (By inhibits the bacterial growth)
Sodium borate: has antiseptic and detergent effect.
Amaranth solution: is used as coloring agent (provides a red color to the solution).
Dist. Water: as a solvent, diluent’s and as a vehicle for the mouth wash.

Label

- ☑ Red or □ White
- Sig. 15 ml to be diluted with equal volume of warm water and used as mouth wash tid.

Procedure:

- Dissolve Boric acid and sod. Borate in half the volume of vehicle by use the warm water.
- Add amaranth solution and mix well.
- Complete to the final required volume by using warm water.
13. Iodine solution Mouth Wash

**Recipe**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqueous iodine solution</td>
<td>2 ml</td>
</tr>
<tr>
<td>Glycerin</td>
<td>15 ml</td>
</tr>
<tr>
<td>Aqua Distillata</td>
<td>to 100 ml</td>
</tr>
</tbody>
</table>

**Calculation**

Prepare 100 ml

**Therapeutic indication**

It is used as an anti-septic mouthwash in cases of the inflammation of oral cavity e.g. glossitis, stomatitis, and gingivitis.

**Role of each ingredient**

- **Aqueous iodine solution**: has a topical antiseptic property.
- **Glycerin**: acts as an emollient and a sweetening agent for the mouthwash.
- **Dist. Water**: as a solvent, diluent’s and as a vehicle for the mouthwash.

**Label**

- Red or White
- Sig. dilute the solution with equal volume of water and use it as a mouthwash tid.

**Procedure:**

[Blank space for procedure]
14. Lemon mouth wash

\[Rx\]

- Citric acid: 0.675 gm
- Lemon syrup: 5 ml
- Glycerin: 15 ml
- Chloroform water: 5 ml
- Aqua Distillata: to 100 ml

Calculation
Prepare 100 ml

Therapeutic indication
It used as a mouth wash in cases of the inflammation of oral cavity. And used in cases of fever associated with excessive thirst.

Role of each ingredient
- **Citric acid**: gives a local cooling sensation to oral mucosa.
- **Lemon syrup**: is used as a flavoring agent with gives a feeling of freshness and cooling on oral mucosa.
- **Glycerin**: has an emollient property on mucous membrane.
- **Chloroform water**: is added as a flavoring agent.
- **Dist. Water**: as a solvent, diluent’s and as a vehicle for the mouth wash.

Label
- ☐ Red or ☐ White
- Sig. dilute the solution with equal volume of water and use it as a mouth wash TID.

Procedure:
15. Calamine Topical Suspension

Calculation:
Prepare 100 ml.

Therapeutic indication
As protective lotion for topical application on the skin in cases of acne, sunburn, chicken box, etc...

Role of each ingredient:
- **Calamine**: a stringent action.
- **Zinc oxide**: mild a stringent and also acts as protective and soothing agent on skin.
- **Glycerin**: emollient and smooth agent
- **Liquefied Phenol**: Antipruritic, disinfectant and topical anesthetic.
- **Water**: acts as a diluent’s and as a vehicle.

Label
- Red or White
- Sig.: m.d.u

Shake the bottle before use
Procedure:

1. In dry mortar, triturate the zinc oxide powder until fine powder is formed.
2. Add calamine powder to zinc oxide powder and triturate until good mixing.
3. Add glycerin to mixture and mix will to form a smooth paste.
4. Add liquefied phenol to mixture and mix will.
5. Add sufficient amount of water to mixture (gradually) and triturate well and transfer the mixture to the cylinder measure and wash by little of water
6. Complete to the final volume with water.
7. Write the red label and attached to the bottle.
16. Menthol and paraffin nasal drop

\[ R \]

\[
\begin{array}{ccc}
\text{Menthol} & 0.1 \text{ gm} & \times 3 \\
\text{liquid paraffin} & \text{to} 10 \text{ ml} & \text{to} 30 \text{ ml}
\end{array}
\]

Calculation:
Prepare 30 ml
Factor: \( 30 \div 10 = 3 \)

Therapeutic indication:
For softening and removal of nasal 'crusts' in cases of atrophic rhinitis and for prevention of such 'crusts' postoperatively.

Role of each ingredient:
\textbf{Menthol}: mild local anesthetic and dulls nasal sensations which helps in removal of these 'crusts'. It is also provides local cooling sensation.

\textbf{Liquid paraffin}: lubricant when applied locally.

Remarks:
These nasal drops provide symptomatic relief in these cases. In patient with deviated septum, surgical interference may be required for long lasting beneficial effect.

Label:
- Red or White
- Sig.: 2-3 drops of the solution to be instilled in each nostril 2-3 times a day
## 17. Alkaline nasal wash

<table>
<thead>
<tr>
<th>Rx</th>
<th>0.6 or × 1.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium bicarbonate</td>
<td>0.20 gm</td>
</tr>
<tr>
<td>Borax</td>
<td>0.20 gm</td>
</tr>
<tr>
<td>NaCl</td>
<td>0.27 gm</td>
</tr>
<tr>
<td>White sugar</td>
<td>0.30 gm</td>
</tr>
<tr>
<td>Aqua</td>
<td>to 30.0 ml</td>
</tr>
</tbody>
</table>

**Calculation:**

Prepare 50 ml

Factor: \(30 \div 50 = 0.6\) or \(50 \div 30 = 1.66\)

**Therapeutic indication:**

As nasal wash in cases of excessive nasal 'crusts' and in atrophic rhinitis.

**Role of each ingredient:**

- **Sodium bicarbonate and borax**: softening the nasal crusts and removal of crusts when increasing nasal secretions.
- **NaCl**: antiseptic agent.
- **White sugar**: make the solution isotonic.
- **Aqua**: solvent and as a vehicle.

**Remarks:**

Solution should be used as nasal wash only after dilution.

**Label:**

- ☐ Red or ☑ White
- Sig.: 5 ml of solution to be dissolved in a 240 ml of water and used for nasal wash bid-tid.
18. Ephedrine nasal drop

Calculation:
Prepare 15 ml
Ephedrine (%) =

 Therapeutic indication:
As a nasal decongestant in cases of congestion of the nasal passages.

Procedure:

Role of each ingredient:
Ephedrine: a sympathomimetic agent causes local vasoconstriction on topical application. It thus relieves nasal congestion.
Sodium chloride: is added to make the solution isotonic.
Aqua: is used as a solvent for ( )? And acts as a vehicle for the nasal drops.

Remarks:
Avoid excessive use of these drops in patients with coronary insufficiency and hypertension.

Label:
• Red or White

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ephedrine</td>
<td>0.15 gm</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>75 mg</td>
</tr>
<tr>
<td>Aqua</td>
<td>to 15 ml</td>
</tr>
</tbody>
</table>

2-3 drops of the solution to be put in each nostril 4-6 times a day.
19. Menthol and thymol nasal drop

处方

- 薄荷醇 457 mg
- umentol 229 mg
- 新binarylene 0.208 ml
- 液体石蜡至 100 ml

 Therapeutic indication:

As a nasal drops to relieve nasal catarrh in cases of rhinitis.

Role of each ingredient:

- 薄荷醇：在 topical application produces a sensation of 'coolness'
  followed by a local analgesic effect on the nasal mucosa.
- 薄荷醇：local disinfectant property but is chiefly used as deodorant in nasal drops.
- 新binarylene：has pungent cooling taste and relieves catarrh
- 液体石蜡：used as a solvent for menthol and thymol and as vehicle for the nasal drops.

Remarks:

- Store the liquid in airtight container.
- In patients with associated nasal infection, use of appropriate chemotherapeutic agent(s) should be recommended.

Label:

- ☐ Red or ☐ White

Put 2 to 3 drops of the solution in each nostril 3 to 4 times a day
20. Nasal saline baby drops

\[ \text{Sodium chloride} \quad 0.9 \text{ gm} \\
\text{Distilled water} \quad \text{to} \quad 100 \text{ ml} \]

**Therapeutic indication:**
As nasal wash and softening the nasal crusts for infant

**Procedure:**

**Role of each ingredient:**

- **Sodium chloride:**
  make the solution isotonic.

- **Distilled water:**
  solvent and as a vehicle

**Label:**

- Red or White

---

**Label:**

Nasal saline baby drops
Put 1 to 2 drops of the solution in each nostril as necessary
21. Ichthammol and glycerin ear drop

\[\begin{array}{|c|c|}
\hline
\text{Ichthammol} & 0.1 \text{ gm} \\
\text{Glycerin} & \text{to} \ 15 \text{ ml} \\
\hline
\end{array}\]

**Calculation:**
Prepare 15 ml

**Therapeutic indication:**
As a topical analgesic eardrops in case of furuncles in external ear canal.

**Procedure:**

**Role of each ingredient:**
- **Ichthammol:** has local irritant and antibacterial properties.
- **Glycerin:** has hygroscopic property, which reduces edema due to inflammation and relieves pain. Its emollient property maybe beneficial. It also acts as vehicle for the eardrops.

**Remarks:**
In sever cases simultaneous use of anti-inflammatory and/or analgesic agents and chemotherapeutic agent may be required.

**Label:**
- ☐ Red or ☐ White

كلية العلوم الصحية بالدريئة المنورة
قسم الصيدلة

Ichthammol and glycerin ear drop

الصيدلي. ................................... التاريخ. . / . هـ
22. Sodium bicarbonate ear drop (Alkaline ear drops)

```
R
Na H CO₃  0.75 gm
Glycerin  5 ml
Purified water  to 15 ml
```

**Calculation:**
Prepare 15 ml

**Therapeutic indication:**
As a "wax" softener for facilitating removal of wax from the external auditory canal.

**Procedure:**

**Role of each ingredient:**
- **Na H CO₃:** in the form of solution is an effective antipuritic agent and helps in softening the "wax" of the ear canal.
- **Glycerin:** local hygroscopic and emollient properties.
- **Purified water:** Acts as a solvent for NaHCO₃, diluent is for glycerin and as a vehicle for the eardrops.

**Remarks:**
- Store the solution in tightly closed container.
- Forceful extraction of wax mass from the external auditory canal must not be attempted.
- If need be irrigation of external auditory canal with KMnO₄ (1:10000) may be carried out before attempting removal of wax.

**Label:**
☑ Red or ☐ White
Eye drops

Ophthalmic products:

1. Eye drops  
2. eye suspension  
3. contact lens solution  
4. eye lotion  
5. eye ointment  
6. ophthalmic inserts

Eye drops are sterile aqueous or oily solution or suspension for instillation into the eye. They are applied into the space between the eye ball and eye lids or onto the corneal surface.

- **Eye drops must be:**
  - sterile.
  - isotonic.
  - free from foreign particles.

- **Eye drops contain substances having:**
  - anti-septic.
  - anaesthetic.
  - anti-inflammatory.
  - mydriatic or miotic properties.
  - substances used for diagnostic purpose.

- **Eye preservative:**
  - Phenylmercuric nitrate acetate 0.002 %
  - Bensalkanum chloride 0.01 %
  - Chlorhexidine acetate 0.01 %

To avoid irritation to the eye.
23. Atropine sulphate eye drops

A sterile solution containing up to 2% of atropine sulphate, with 0.002% of phenylmercuric acetate or nitrate or 0.02% v/v of benzalkonium chloride solution (0.01 w/v of benzalkonium chloride) in purified water.

```
R
Atropine sulphate  2 gm
Benzalkonium chloride  0.02 ml
Purified water  to 100 ml
```

Calculation:
Prepare 15 ml
Atropine sulphate (%) =

Therapeutic indication:
Mydriatic

Procedure:
Dissolved Atropine sulphate in …

Role of each ingredient:
Atropine sulphate: parasympatholytic, mydriatic
Benzalkonium chloride: preservative
Aqua: it is used as a solvent for Atropine sulphate and acts as a vehicle for eye drops.

Remarks:
- Atropine may be cause blurring of vision.
- Atropine sensitive to light.
- May be occur for several day after instillation of the drops.

- Label: ☐ Red or ☐ White

١٨٣٥lander الطبية بالمدينة المنورة قسم الصيدلة
-Atropine sulphate Eye drops (-----) %-

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