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PHARMACEUTICS – I

UNIT 3

TOPIC :

- **Monophasic liquids :** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.

Monophasic liquids

→ Monophasic liquids are homogeneous liquid preparations consisting of a single phase, meaning the drug is completely dissolved in a suitable solvent (usually water, alcohol, or both). These formulations appear as clear solutions and are physically and chemically uniform.

Advantages of Monophasic Liquids

- Fast absorption due to the drug being in dissolved state
- Uniform dose in each administration
- Easy to administer to children, elderly, and unconscious patients
- Can be formulated for various routes: oral, topical, nasal, rectal, etc.

Disadvantages of Monophasic Liquids

- Less stable than solid dosage forms
- Require preservatives to prevent microbial growth
- Bulky and difficult to transport/store
- Unpleasant taste of some drugs may need masking
- Accurate measurement of dose is essential

Gargles

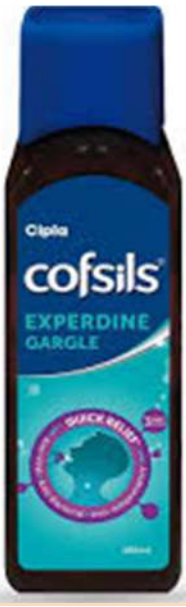
→ Gargles are aqueous solutions used to treat infections or irritation in the throat and mouth. They are intended to be held in the throat and gargled for a short period and then expelled. Gargles are not meant to be swallowed.

Preparation Method

1. Dissolve the active ingredients (e.g., Povidone-Iodine) in a small quantity of water.
2. Add glycerin, sweeteners, and flavouring agents.
3. Make up the volume with purified water to 100 ml.
4. Filter and fill into amber-coloured bottles.
5. Label as "For External Use Only" and instruct "Do Not Swallow".

Uses

- To relieve sore throat or irritation
- To disinfect the throat and mouth
- To reduce inflammation and swelling
- To provide a soothing and cooling effect
- To treat minor infections of the upper respiratory tract



Mouthwashes

→ Mouthwashes (or mouth rinses) are aqueous, hydroalcoholic or antiseptic solutions intended for cleansing the mouth, freshening breath, and/or treating oral infections. They are used by swishing in the mouth and spitting out, not swallowed.

Preparation Method

1. Dissolve chlorhexidine in a small quantity of purified water.
2. Add glycerin, flavoring agents, and alcohol.
3. Add sweeteners like sorbitol or saccharin.
4. Mix thoroughly and make up the volume to 100 mL with purified water.
5. Filter if necessary, then fill into amber-colored bottles.
6. Label as "For Oral Use – Do Not Swallow".

Uses

- Maintain oral hygiene
- Treat minor infections of the gums and mouth
- Reduce dental plaque and prevent gingivitis
- Provide temporary relief from bad breath (halitosis)
- Soothe oral ulcers or inflammation

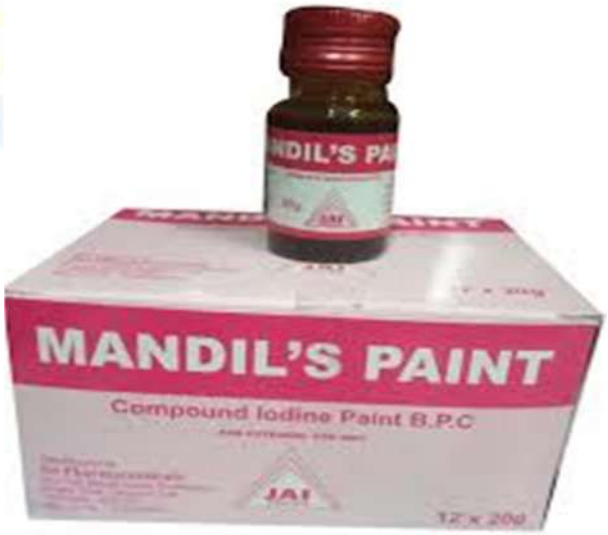
Throat paints

→ Throat paints are viscous, medicated liquid preparations that are intended for direct application to the mucous membrane of the throat using a brush, swab, or cotton applicator.

→ They are designed to adhere to the throat area and provide prolonged local action, such as antiseptic, analgesic, or astringent effects.

Preparation Method

1. Dissolve potassium iodide in a small quantity of purified water.
2. Add iodine, stir until fully dissolved.
3. Incorporate menthol into glycerin by gentle heating (if needed).
4. Mix all the solutions together and make up the volume with purified water.
5. Filter and fill into dark-colored bottles to protect from light.
6. Label with:
    - "For External Use Only"
    - "Apply with a cotton swab"
    - "Do not swallow"



Uses

- ✓ Disinfection of the throat area
- ✓ Relief of sore throat and tonsillitis
- ✓ Soothing effect in pharyngitis and laryngitis
- ✓ Treat mouth ulcers or local inflammation
- ✓ Provide local anesthesia in painful throat conditions

EAR DROPS

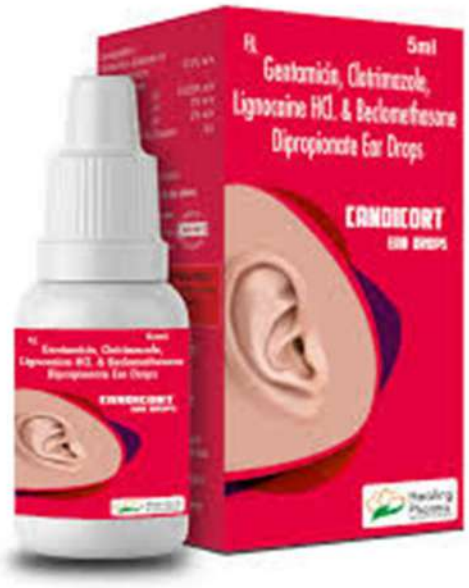
→ Ear drops are sterile liquid preparations intended for instillation into the ear canal (aural administration). They may be solutions, suspensions, or emulsions, used to treat infections, reduce pain or inflammation, or soften earwax.

Preparation Method

1. Dissolve ciprofloxacin and dexamethasone in a mixture of glycerin and water.
2. Add preservative and adjust the pH to suitable range (~5.0–6.0).
3. Add propylene glycol and other excipients.
4. Pass through sterile filtration or autoclave for sterilization.
5. Fill into sterile dropper bottles under aseptic conditions.
6. Label appropriately.

Uses

- ✓ To treat ear infections (otitis externa, otitis media)
- ✓ To relieve ear pain or inflammation
- ✓ To soften and remove earwax (cerumenolytics)
- ✓ As antifungal or antibiotic therapy
- ✓ Sometimes used before or after ear surgery



NASAL DROPS

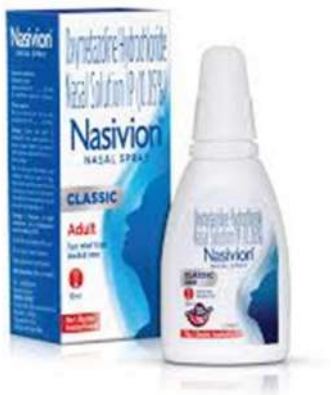
→ Nasal drops are sterile, aqueous solutions intended for instillation into the nasal cavity through a dropper. They are used to provide local or systemic effects, commonly to relieve nasal congestion or treat nasal infections.

Preparation Method

1. Dissolve sodium chloride and citric acid in a portion of purified water.
2. Add the active ingredient (e.g., xylometazoline).
3. Add preservative (benzalkonium chloride) if needed.
4. Make up the volume with purified water.
5. Adjust pH to 5.5–6.5 using buffering agents.
6. Sterilize by filtration or autoclaving (if ingredients are heat stable).
7. Fill in sterile dropper bottles under aseptic conditions.
8. Label and store properly.

Uses

- ✓ Decongestant action in colds or allergies
- ✓ Treat nasal infections (bacterial or viral)
- ✓ Deliver hormonal or systemic drugs (e.g., desmopressin)
- ✓ Moisturize dry nasal mucosa
- ✓ Clear nasal blockage in infants and adults



ENEMAS

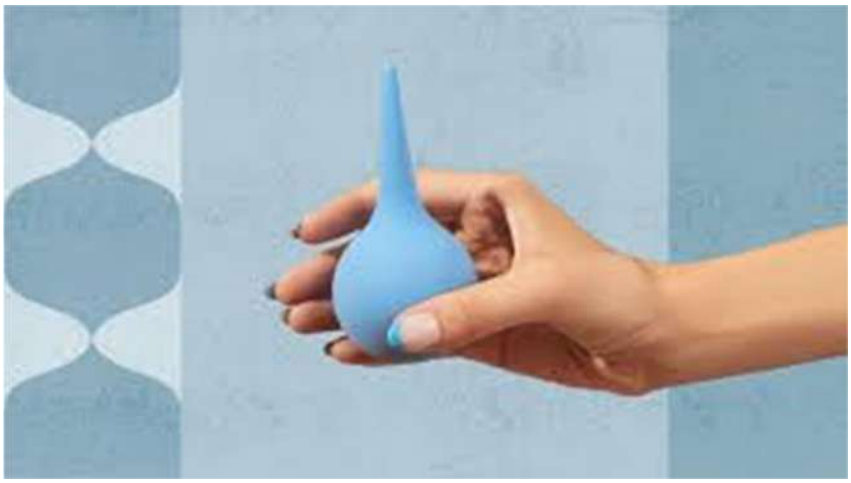
→ Enemas are liquid preparations intended to be introduced into the rectum through the anus to produce local or systemic action. They may be retained in the rectum or evacuated shortly after administration, depending on the therapeutic purpose.

Preparation Method

1. Dissolve active ingredients (salts or drugs) in purified water.
2. Add glycerin or viscosity enhancers if needed.
3. Mix thoroughly and adjust volume.
4. If required, sterilize by autoclaving (especially for retention/medicated enemas).
5. Fill into rectal bottles or enema bags with proper nozzles.
6. Label properly.

Uses

- ✓ To relieve constipation or cleanse the bowel before surgery or examination
- ✓ To deliver drugs systemically (when oral route is unsuitable)
- ✓ For diagnostic procedures (e.g., barium enema for X-rays)
- ✓ To treat local infections or inflammation in rectal area
- ✓ To provide hydration or nutrition (rare/emergency use)



Syrups

→ Syrups are concentrated, aqueous, sweetened solutions containing sugar (usually sucrose) or sugar substitutes, with or without medicinal substances. They are oral liquid dosage forms used mainly to enhance taste and ease of administration, especially for pediatric patients.

Methods of Preparation

1. **Solution with Heat (Hot Method)**
   - Sugar dissolved in water using gentle heat
   - Suitable for heat-stable drugs and ingredients
2. **Solution without Heat (Cold Method)**
   - Sugar dissolved in water with agitation
   - Prevents inversion of sugar (which affects taste)
3. **Percolation Method**
   - Used for preparing herbal or extract syrups
4. **Addition of Medicated Liquid to Syrup Base**
   - Medicated solution (already prepared) is added to flavored syrup base

Uses

- ✓ Vehicle for oral medications (e.g., cough syrups)
- ✓ To mask unpleasant taste of drugs
- ✓ Provide nutrients (e.g., iron syrups)
- ✓ Easy to swallow and dose (especially for children and elderly)

Elixirs

→ Elixirs are clear, sweetened, hydro-alcoholic solutions intended for oral use, usually containing medicinal substances. They may contain flavoring agents, preservatives, and sometimes coloring agents.

→ Unlike syrups, elixirs contain a significant amount of alcohol, which helps solubilize poorly water-soluble drugs and act as a preservative.

Preparation Method

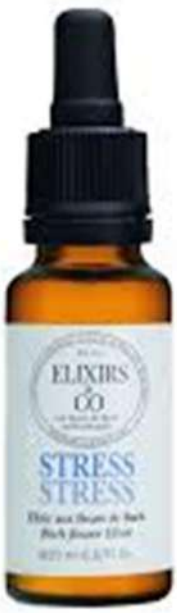
1. Dissolve the drug in alcohol.
2. Prepare syrup base separately by dissolving sweeteners in water.
3. Mix both solutions slowly with constant stirring to avoid precipitation.
4. Add flavour and colour.
5. Filter and fill in amber-coloured bottles.
6. Label properly

Uses

✓ To deliver drugs orally in a pleasant-tasting liquid form

✓ To dissolve drugs that are not easily soluble in water

✓ To provide quick absorption due to drug in solution form



Liniments

→ Liniments are liquid or semi-liquid preparations intended for external application to the skin with friction (i.e., by rubbing). They are used to relieve pain, stiffness, or inflammation in muscles and joints. Liniments may be solutions, emulsions, or suspensions.

→ Note : Not for use on broken or inflamed skin (unless specified).

Preparation Method

1. Weigh and measure all ingredients accurately.
2. Dissolve the active components (e.g., menthol, camphor) in the volatile or fixed oil base.
3. Mix thoroughly until a homogeneous solution or emulsion is formed.
4. Filter (if needed), fill into well-sealed amber bottles.
5. Label clearly.

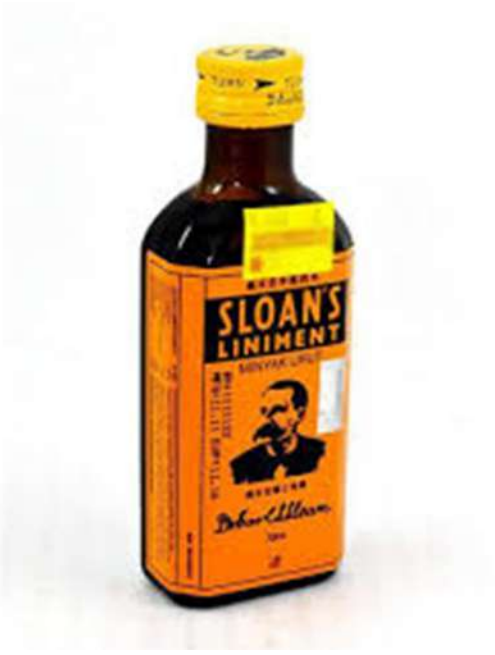
Uses

✓ To relieve muscular pain, stiffness, cramps, or sprains

✓ As a counter-irritant to produce a warming or cooling sensation

✓ Some have anti-inflammatory or analgesic effects

✓ Used in conditions like arthritis, sports injuries, and rheumatism



Lotions

→ Lotions are liquid or semi-liquid preparations intended for external application to the skin without friction. They may be solutions, suspensions, or emulsions, designed for soothing, protective, antiseptic, or medicated action.

Preparation Method

1. Mix powders (e.g., calamine, zinc oxide, bentonite) in a mortar.
2. Add glycerin and form a smooth paste.
3. Add liquefied phenol and small portions of water while mixing.
4. Transfer to a measuring cylinder, and make up the volume with water.
5. Shake well and fill into a bottle.
6. Label with “Shake well before use” and “For external use only”.

Uses:

✓ To soothe irritated skin (e.g., in sunburn or itching)
✓ To treat infections (e.g., antiseptic or antifungal lotions)
✓ To provide cooling effect
✓ Used in inflammatory skin conditions, rashes, acne, eczema