

# **Pharmaceutical Technology I**

## **Lecture 6**

**Special Application Solutions**  
**&**  
**Official Solution Prepared from Tablets**  
**3rd Level**  
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**Dr. Ahmad A Yosef**

# Special application solutions

## Nasal preparations

These contain adrenergic agents and are employed for their decongestant activity on the nasal mucosa.

### Example

Phenylephrine HCl solution USP

(0.125 to 10%)

Used as vasoconstrictor isotonic solution

## Special application solutions

approximately equal to 0.9% NaCl and buffered to the normal pH range of nasal fluids (pH 5.5 to 6.5) and stabilized and preserved as required.

Certain commercial solutions which are available for both pediatric and adult use these preparations are best used for short periods

(no longer than 3 to 5 days)

# Special application solutions

## Nasal preparations

Patients should be advised not to exceed the recommended dosage and frequency of use

### Examples

phenylephrine can be used every 3-4 hr

while

oxymetazoline used every 12 hr

# Special application solutions

## Inhalation solutions

Inhalations are drugs or solutions of drugs administered by the nasal or oral respiratory route either for local or systemic effect

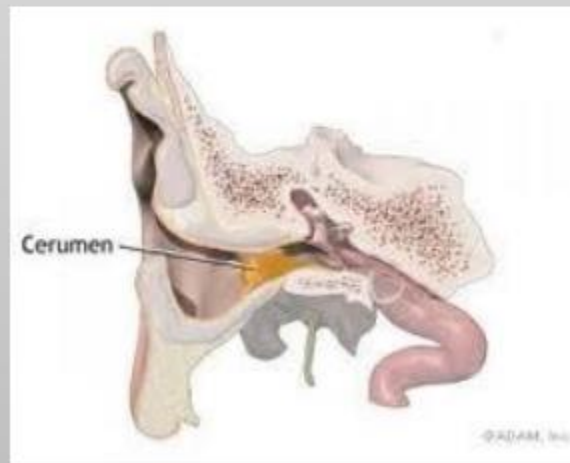
# Special application solutions

## Otic solutions or preparations (Ear preparation)

Are usually placed in ear canal by drops or in small amount for the removal of excessive cerumen (ear wax) or for the treatment of ear infections, inflammation, or pain.

## Cerumen-removing solutions

Cerumen is a combination of the secretions of the sweat and sebaceous glands of the external auditory canal. If the secretion is allowed to dry, it forms sticky semisolid which holds epithelial cells, fallen hair, dust and foreign bodies that make their way into the ear canal. Excessive accumulation of cerumen in the ear may cause itching, pain, impaired hearing



## Cerumen-removing preparations

- Light mineral oil
- Vegetable oils
- Hydrogen peroxide
- Solutions of synthetic surfactant, due to their cerumenolytic activity in the removal of ear wax e.g. **Triethanolamine polypeptide oleate condensate** 10% ear drop formulated in propylene glycol is used to emulsify and disperse the cerumen thereby facilitating its removal by subsequent water irrigation.



## Cerumen-removing preparations

- Carbamide peroxide in glycerin/propylene glycol: this on contact with the cerumen; the carbamide peroxide releases oxygen which disrupts the integrity of the impacted wax, allowing its easy removal.

Vehicle used in ear preparations  
anhydrous glycerin or propylene glycol

- These viscous vehicles permit maximum contact time between the medication and the tissues of the ear.
- Their hygroscopicity causes them to draw moisture from the tissues thereby reducing inflammation and diminishing the moisture available for the life process of the microorganism present.
- These hygroscopic vehicles reduce the swelling of the tissues (and thus some pain), so used as vehicle for topical analgesic for the preparation of ear which contains the analgesic antipyrine and local anesthetic benzocaine.

## Otic solutions and preparations

### Preservatives

- Chlorobutanol 0.5%
- Thimerosal 0.01%
- Combinations of the parabens

### Antioxidants

Sodium bisulfite

### Packaging

Packaged in small (5-15ml)  
glass or plastic  
containers with a  
dropper

# Special application solutions

- Topical oral (dental) solutions
- Mouthwashes and gargles: aqueous solutions for the prevention and treatment of mouth and throat infections can contain antiseptics, analgesic and / or astringents. They are usually diluted with warm water before use.

# Special application solutions

- Vaginal solution and douches  
vaginal douches refer to vaginal irrigation.
- Rectal solution (retention enemas); a retention enema means injecting a solution into the rectum and holding for a specific period of time. An implant or retention enema generally uses only enough liquid to fill the rectum and possibly the sigmoid colon.

## **Official solutions prepared from tablets**

Halazone tablets for solution USP  
(4mg of halazone).

Uses

Disinfectant

For the sterilization of drinking water

1 or 2 tablets per liter

The tablets should be labeled to indicate that they are not intended to be swallowed.

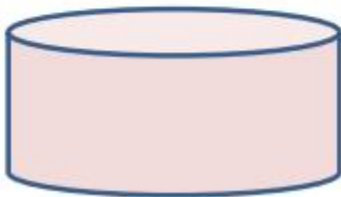
## Official solutions prepared from tablets

Potassium permanganate tablet for solution USP 60,  
125 and 300 mg of potassium permanganate

Uses

Topical anti-infective

Applied topically to the skin and mucous membranes as  
0.004 to 1% solution or in a wet dressing



A pink color when diluted



A deep violet-red color when concentrated

Only distilled water should be used in preparing potassium permanganate solution why?

Since potassium permanganate is incompatible with organic materials such that might be present in tap water, only distilled water should be used in preparing solution of it.



Thank You