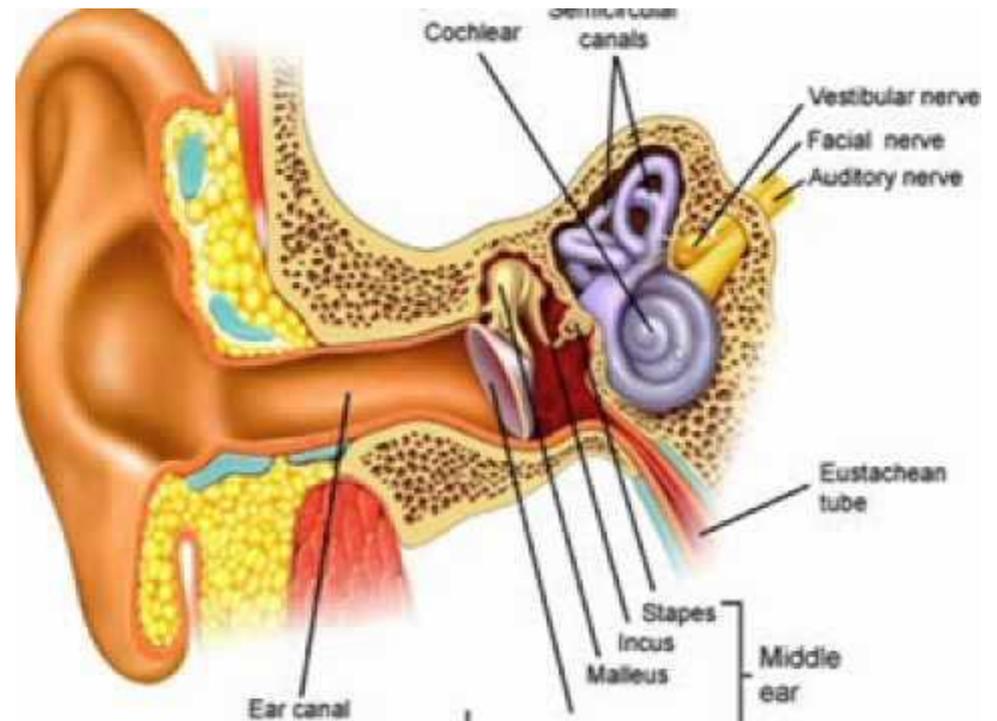


# Otic Formulations

# Introduction:

- Solutions, suspensions, gels, and ointments



# Uses of Otic Formulations

القناة السمعية الخارجية

- Bacterial growth in (external auditory canal)
- Anti-infective agents are formulated into eardrops (solutions or suspensions) in a vehicle of anhydrous glycerin or propylene glycol.
- Otic solutions and suspensions are used to treat infections in the external auditory canal
- The solvents are glycerin, propylene glycol, vegetable oils, mineral oils, or low molecular weight polyethylene glycols
- The above solvents adhere to the canal better than water and alcohol
- Suspensions provide longer drug effect

# Uses of Otic Formulations

- These viscous vehicles permit:
  - maximum contact time between the medication and the tissues of the ear.
  - In addition, their hygroscopicity causes them to draw moisture from the tissues, reducing inflammation and diminishing the moisture available for the life process of the microorganisms.
  - To assist in relieving the pain that frequently accompanies ear infections, a number of anti-infective otic preparations also contain analgesic agents, such as antipyrine, and local anesthetics, such as pramoxine hydrochloride and benzocaine.

# Uses of Otic Formulations

- Some physicians prefer the use of corticosteroids in ointment form, packaged in ophthalmic tubes.
- These packages allow placement of small amounts of ointment in the ear canal with a minimum of waste.
- Many commercial products used in this manner are labeled eye and ear to indicate their dual use.

میرزا

# Uses of Otic Formulations

تراكيب شمع الأذن :

- Ear Wax Impaction in External Auditory Canal:

← الشمع - The cerumen remaining in the ear will become dry and difficult to remove from the canal

- Formulation containing carbamide peroxide, glycerin, hydrogen peroxide, and olive oil

- Carbamide peroxide and hydrogen peroxide:

1. cause a mechanical "bubbling" action that softens and breaks up the dried cerumen and

2. have anti-infective action

← likes water - Glycerin is hygroscopic and absorbs moisture → help soften the cerumen

- Olive oil serves as a softening agent and increase viscosity of the formulation to stay longer in the ear

in the ear \*

# Uses of Otic Formulations

\* route of administration.

- Cerumen removal usually involves placing the otic solution in the ear canal with the patient's head tilted at a 45° angle, inserting a cotton plug to retain the medication in the ear for 15 to 30 minutes, followed by gentle flushing of the ear canal with lukewarm water using a soft rubber ear syringe

# Uses of Otic Formulations

- Irrigation solution:

- An ear irrigation solution that contains water and alcohol is used following the treatment with Carbamide peroxide formulation
- Flow out of the canal easily
- The ear is flushed with the solution with a soft rubber ear syringe
- Water should leave the canal out because it will support bacterial growth
- May contain surfactants to enhance the spreading of the solution
- May contain weak boric acid (0.5-1%) or aluminum acetate solutions to lower the pH in the canal

⇒ lower microbial growth

# Uses of Otic Formulations

التهاب الأذن

- Swimmer's Ear (otitis externa):
  - Water becomes lodged between cerumen impaction and the tympanic membrane <sup>محصور</sup> عنشاء الطبلة
  - Trapped water can encourage bacterial growth leading to inflammation and infection of the external auditory canal
  - Formulations include: isopropyl alcohol, glycerin, boric acid, hydrocortisone, ethyl alcohol, and acetic acid
  - Also aminoglycoside antibiotics can be added if infection is present
  - The alcohol in the formulation help to reduce the surface tension of water which aids in its removal from the canal
  - Glycerin in the formulation absorbs water
  - Acetic acid reduces pH in the canal to minimize bacterial growth

# Uses of Otic Formulations

مائل / مهران

- If a child is prone to develop ear infections as a result of swimming or showering, it might be advisable to recommend the parents to consult a physician for prophylactic medication to use during swimming season and consider using ear plugs that fit snugly in the ear when swimming or showering. دواء وقائي
- After the child emerges from the water or shower, the parents can be advised to use a blow dryer on a low setting to dry the ear quickly without trauma. The dryer should not be held too close to the child's ear. مخرج

# Uses of Otic Formulations

- Skin Disorders of the Ear:

معرفون ر

- The outer ear is a skin-covered structure and is susceptible to the same dermatological conditions as other body part

Skin condition	Major ingredients	Function
Contact dermatitis التحسس الجلدي	2.5% aluminum acetate solution	Antipruritic , anti-inflammatory, and antibacterial
Seborrhea or psoriasis التحسس الجلدي الدهني الصدفية	Topical corticosteroids (gels or ointments)	Anti- itching Otic ointments typically use petrolatum as the base.
Boils (localized infection of the hair follicles with pus) الدمامل صدية ب.	- Topical antibiotics - Antipyrine (analgesic) in propylene glycol or anhydrous glycerin	Topical analgesics (antipyrine) with hygroscopic vehicle reduce swelling and retard bacterial growth by drawing moisture from the swollen <u>tissue into the vehicle</u>

# How to use Otic Drops

**First:** The patient should be aware of the purpose of the formulation:

إذا كان للشجع المتراكم داخل الأذن

- If it is to remove impacted cerumen the drops are to be <sup>①</sup>instilled and then removed with an irrigation solution<sup>②</sup>
- If the drops for infection or inflammation they are instilled and <sup>③</sup>left in the ear  
للانتعاب:-

**Second:** the patient should understand the length of time to use the formulations:

- <sup>④</sup>antibiotic ear drops: continue using the drops for 3 days beyond the time the ear symptoms disappear
- Product for swimmer's ear may need <sup>⑤</sup>7-10 days to demonstrate relief

تستخدم حين اختفاء الأعراض

# How to use Ear Drops

1. Wash your hands
2. Warm the dropper bottle in your hands → اذا كانت دافئ العلاجية
3. If a suspension, shake well
4. Draw up a small amount of medication into the dropper
5. Lie on your side so the affected ear points toward the ceiling → السقف
6. Position the tip of the dropper just inside the canal. Avoid touching the dropper against the ear
7. For adults, hold the ear lobe up and back; for children, hold the ear lobe down and back
8. Squeeze the directed numbers of drops into the ear canal and allow the drops to run into the ear
9. Remain lying 3-5 minutes, gently massage the area around ear to aid in spreading of drops in the canal
10. Place a clean cotton pledge just inside ear to prevent leakage when in upright position
11. Replace cap

# Tips

طبلة الأذن

- Do not use ear drops if your eardrum has been damaged
- Avoid using very hot or very cold eardrops. The medication should be at room temperature or slightly warmer. Warm the drops by holding the bottle in your hands for a few minutes

# Packaging

- Solutions and suspensions packaged in small (5-15 ml) dropper bottles or droptainers  
ازا كان :-
- Otic ointments can be packaged in an ophthalmic tube
- Many otic formulations are self preserving because of the high concentration of glycerin, propylne glycol, or alcohol
- If the above agents are not present a preservative should be added