



# Direct Application of Antibiotics to Middle Ear for Ear Infection Treatment

Technology No. z01159

## Antibiotics in Gel for Middle Ear Infection

The delivery of antibiotics, antifungal and antiviral agents in a gel to the middle ear through the tympanic membrane offers superior efficacy and safety profile compared to current oral treatments for ear infection. Common oral antibiotic treatments for ear infection have negative side effects because oral medications are distributed throughout the body, rather than localized at the site of infection. This leads to a rise in drug resistant strains of bacteria and patients are over treated with broad spectrum antibiotics. The gel technology utilizes a biocompatible material that is a liquid at room temperature and a gel at body temperature. The gel would remain in contact with the tympanic membrane over an extended period of time allowing a loaded drug to diffuse through the membrane and enter the middle ear.

The gel formulation could provide a continuous administration to the middle ear to treat the ear infection. The targeted approach would result in a higher cure rate and reduce the risks of side effects associated with antibiotics taken orally such as diarrhea, hypersensitivity, etc. This approach could be immediately applied to therapeutics that are orally administered, changing their mechanism of delivery and thus extending their patent life. This technique could also apply to new drugs being developed.

### **BENEFITS OF DELIVERING ANTIBIOTICS THROUGH THE TYMPANIC MEMBRANE TO TREAT EAR INFECTION:**

- Drug delivery material is a liquid at room temperature and changes to a gel at body temperature
- Gel holds drug in contact with tympanic membrane and allows diffusion to treatment area for sustained delivery
- The gel is a biocompatible material, lowering the risk of infection from treatment and making prolonged treatment possible
- Antibiotic is administered only to the middle ear
- Reduced side effects associated with oral antibiotics
- Potential to reduce reoccurrence due to inadequate treatment

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