INFLAMMATION & INFECTIOUS DISEASE

COMPOSITIONS AND METHODS FOR DELIVERING THERAPEUTIC AND IMAGING AGENTS TO THE SINUSES AND MIDDLE EAR

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Introduction: The present methods for treating middle ear infections, such as otitis media, in children involves using systemic non-targeted antibiotics and analgesics. This mode of treatment produces numerous adverse effects and contributes to antibiotic resistance.

Technology: Georgia State University inventors have discovered magnetic nanoparticles (NP) deliverable to anatomical targets, such as the sinuses and middle ear. These nanoparticles are capable of delivering therapeutics (such as PDE4 inhibitors) and diagnostics to these regions and can be introduced intranasally or through the oral cavity into the nasopharynx. An efficient distribution of NPs inside the body is controlled using external magnets.

Applications:

- Treatment of otitis media (viral and bacterial infection) in children
- Treatment and detection of oral cavity conditions, such as various cancers
- Treatment of inflammation and mucus overproduction in ears, nose and nasal passages
- Treatment of Meniere’s disease and cystic fibrosis
- Kits for the delivery of therapeutic/diagnostic agent to middle ear and sinuses

Advantages:

- Targeted approach leading to reduced amount of therapeutic
- Cost effective, reduced toxicity/side effects due to NPs removal
- Allows delivery into difficult to reach places

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