

Novel Invasions in Canine Otitis Treatment using Aromatic Plant Compounds and Chlorhexidine

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Short Communication

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ABSTRACT

Canine otitis, a common inflammatory condition of the ear, significantly impacts the health and comfort of dogs. This condition, often categorized as otitis externa, media, or internal, depending on the affected ear region, can result from various factors including allergies, parasites, or bacterial and fungal infections. Understanding the underlying cause is effective treatment. One of the most prevalent forms, otitis externa, involves the inflammation of the external ear canal. Dogs with long, floppy ears or those that spend a lot of time in water are particularly prone to this condition. The warm, moist environment within their ears can encourage microbial growth, leading to infection. Symptoms include persistent scratching, head shaking, and discharge from the ear, often accompanied by a foul odor.

INTRODUCTION

Diagnosis typically involves a thorough examination of the ear canal, possibly including cytology or culture tests to identify specific pathogens [1,2]. Treatment varies depending on the cause but may involve cleaning the ear canal, applying topical medications, and addressing any underlying conditions such as allergies.

Preventive measures, including regular ear cleaning and monitoring for signs of irritation, play a vital role in managing canine otitis. Owners should be vigilant and consult veterinarians at the first signs of discomfort in their pets' ears. Early intervention can prevent complications, ensuring a better quality of life for affected dogs [3].

Canine otitis, an inflammatory condition affecting the ear canal, is prevalent in veterinary medicine, particularly dogs. The common etiological agent includes *Staphylococcus spp.*, which is frequently resistant to conventional treatments involving antibiotics and antiseptics. Thus, the study "Combinatorial effects between aromatic plant compounds and

Chlorhexidine Digluconate (CLX) against canine otitis-related *Staphylococcus spp.*" explores the potential of using Aromatic Plant Compounds (APCs), Eugenol (EUG), Trans-Cinnamaldehyde (TC), and Geraniol (GER), both individually and in combination with CLX to combat *Staphylococcus* associated infections more effectively. The study employed disk diffusion and micro dilution tests to determine the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) of the APCs and CLX against strains of *Staphylococcus spp.* isolated from canine otitis cases. The synergistic effects were then analysed using the checkerboard assay, revealing interactions between the natural compounds and CLX [4,5].

TC exhibited the highest inhibition zones among the tested APCs, followed by GER and EUG. MIC and MBC results indicated that EUG required higher concentrations to inhibit bacterial growth than TC and GER. Additionally, combining APCs with CLX significantly enhanced antibacterial activity, particularly with GER. The study demonstrated that GER had the lowest mean Fractional Inhibitory Concentration Index (FICI) when combined with CLX, indicating strong synergy. The findings underscore the potential of APCs, especially GER, as adjuncts to conventional antiseptics like CLX in treating canine otitis. The enhanced antibacterial activity observed with these combinations suggests a promising approach to mitigate antimicrobial resistance. The study highlights the need for further research to understand the molecular mechanisms underlying the observed synergistic effects.

CONCLUSION

This study presents a compelling case for integrating natural compounds with traditional antimicrobial agents in veterinary medicine. The marked synergy between GER and CLX offers a potential alternative for managing bacterial otitis in dogs, addressing the dual challenges of efficacy and resistance. Future studies should focus on the clinical applicability of these combinations, exploring their safety, efficacy, and mechanisms *in vivo*. Such research could lead to new, more effective formulations in veterinary practice.

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