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Antibacterial effect of N-acetylcysteine on common canine otitis externa isolates

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Abstract

Background: N-Acetylcysteine (NAC) has the potential to be a useful therapeutic agent for the treatment of otitis externa due to its antimicrobial and mucolytic properties, as well as its ability to disrupt bacterial biofilm.

Hypothesis/objectives: To determine the antibacterial activity of NAC against common bacterial isolates associated with canine otitis externa.

Animals: Twenty two isolates from canine clinical cases of otitis externa were identified and tested, including five *Staphylococcus pseudintermedius*, six *Pseudomonas aeruginosa*, five *Corynebacterium* spp. and six β -haemolytic *Streptococcus* spp. isolates.

Methods: Each isolate was grown on blood agar for 24 h and transferred to Mueller Hinton Broth (MHB) to achieve a final concentration of 5×10^5 CFU/mL. NAC was diluted in MHB to a starting concentration of 160 mg/mL and serial two-fold microdilution assays were performed in triplicate with negative controls for all isolates tested. Concentrations of NAC tested ranged from 0.125 to 80 mg/mL. A 50 μ L volume of bacterial suspension was used to inoculate each well.

Results: The minimum inhibitory concentration (MIC) of NAC for all isolates tested ranged from 5 to 20 mg/mL.

Conclusions and clinical relevance: N-Acetylcysteine inhibits clinically relevant and drug resistant bacteria in vitro, and has potential for use as a novel agent for treatment of otitis externa.

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