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Comparison of the Antibacterial Effects of Two Local Anesthetics: Lidocaine and Articaine

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Abstract: Aim: The antibacterial effect of lidocaine has been studied widely, but the effect of articaine has not yet been evaluated. We aimed to investigate whether commercially available articaine possesses bactericidal or bacteriostatic effect in comparison with lidocaine in a prospective laboratory setting. Materials and Methods: The antibacterial effects of articaine and lidocaine were studied on *Pseudomonas aeruginosa* ATCC27853, *Staphylococcus aureus* ATCC25923, *Escherichia coli* ATCC35218, and *Proteus mirabilis* ATCC7002 strains and a patient isolate of *Serratia marcescens*. For this study, 2% lidocaine HCl and articaine HCl were diluted to 10, 5, 2.5, 1.25, 0.625, 0.312, 0.156, and 0.078 mg ml⁻¹ concentrations to determine the antibacterial effect. All bacterial strains were inoculated to 2 ml antibiotic broth at a concentration of 5X10⁵ m⁻¹ for each well. For each bacterial strain, minimal bactericidal concentration (MBC) was evaluated by inoculating the content of wells onto blood agar plates and incubating for 24 hours. Results: MBC was detected for both of the local anesthetics. Although articaine showed bacteriostatic effect on all bacterial strains, two of five strains were resistant to lidocaine. Conclusions: The finding of articaine's bacteriostatic effect against all bacterial strains might be an evidence for its antibacterial use.

Key Words: Local anesthetics, articaine, lidocaine, infection, bactericidal

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