0.01% Hypochlorous Acid as an Alternative Skin Antiseptic: An In Vitro Comparison

Abstract

Objective: Compare the in vitro efficacy of hypochlorous acid 0.01% (HA), povidone iodine 5% (PI), chlorhexidine gluconate 4% (CHG), and isopropyl alcohol 70% (IPA) against common skin microorganisms.

Materials and methods: Time-kill studies were conducted against methicillin-susceptible Staphylococcus aureus (MSSA) and Staphylococcus epidermidis (MSSE), methicillin-resistant S. aureus (MRSA) and S. epidermidis (MRSE), Candida albicans, Corynebacterium species (striatum and amycolatum), Propionibacterium acnes, Pseudomonas aeruginosa, Streptococcus pyogenes, Staphylococcus capitis, and Staphylococcus xylosus.

Results: Methicillin-resistant S. aureus: Bactericidal effect was immediate for HA and IPA. For PI and CHG, the effect occurred at 1 and 10 minutes, respectively. Methicillin-resistant S. epidermidis: Hypochlorous acid, IPA, and PI had immediate bactericidal effects, whereas CHG required 1 minute. Methicillin-susceptible Staphylococcus aureus: All agents had bactericidal effects at 1 minute. C. species, S. pyogenes, P. aeruginosa, and P. acnes: All antiseptics demonstrated immediate bactericidal effects. Methicillin-susceptible Staphylococcus epidermidis and S. capitis: Hypochlorous acid and IPA had immediate effect, whereas PI and CHG required 1 minute. C. albicans: Hypochlorous acid, IPA, and PI were immediately bactericidal, whereas CHG required 1 minute. S. xylosus: Hypochlorous acid and CHG were immediately bactericidal, whereas IPA and PI required 1 and 2 minutes, respectively.

Conclusion: In vitro studies of HA 0.01% were observed to have equal or more efficacious antiseptic properties compared with IPA, CHG, and PI.