

2nd International Conference on**ADVANCES IN SKIN,****WOUND CARE AND TISSUE SCIENCE**

November 9-10, 2017 | Frankfurt, Germany

IN VITRO ANALYSIS OF THE ANTIBACTERIAL EFFECT OF THE SILVER-COATED NPWT SYSTEM**Eun hee Han^a, Bo Young Park^b, Hyung Min Hahn^a and Il Jae Lee^a**^aAjou University Hospital, South Korea^bEwha Mockdong Hospital, South Korea

Background: Post-traumatic skin and soft tissue injury is prone to infection, the risk of amputation increases when it spreads to deep tissue infection. The recently used negative pressure wound therapy (NPWT) improves the outcome of traumatic wound healing but limits the treatment of infected wounds. Therefore, the development of NPWT with anti-bacterial function is required for the care of infected skin and soft tissue wounds. Silver is a substance that has antimicrobial function without damaging human tissue. In this study, we tested the in vitro antimicrobial activity of the silver-coated NPWT system.

Methods: Bacteria strains, common pathogens of traumatic wound infections, were inoculated on agar plates. And then, the original or silver-coated foam or NPWT system was placed on bacterial inoculated agar plates. We measured the colony counts and compared the counts in the original and silver-coated foam or NPWT system for each bacteria strain, respectively.

Results: The count of colony in conventional foam was 60 for *Escherichia coli*, 101 for *Pseudomonas aeruginosa*, and 207 for *Staphylococcus aureus*. On the other hand, the colony count in silver foam was 18 for *E. coli*, 58 for *P. aeruginosa*, and 137 for *S. aureus* (Fig 1A). The colony counts were also compared in the original and silver-coated NPWT system. The colony count in the original NPWT system was 35 for *E. coli*, 52 for *P. aeruginosa*, and 81 for *S. aureus*. The colony count in silver-coated NPWT system was 5 for *E. coli*, 31 for *P. aeruginosa*, and 28 for *S. aureus*.

Conclusions: In this study, the count of colonies was significantly lower than the original NPWT system in silver-coated NPWT system for all tested bacteria strains. In vivo and clinical studies on the antimicrobial effect and safety of silver-coated NPWT system are needed in the future.

Biography

Eunhee Han majored in life science and received a master's degree. She is currently working as a researcher at plastic surgery department of Ajou University. She is conducting various experiments such as cell culture, DNA, RNA and protein work. She has successfully completed the Korea Good Clinical Practice (KGCP) course and Education of Laboratory Animal Research Center (LARC).

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