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IN-VIVO ANTIMICROBIAL AND BIOCOMPATIBILITY ANALYSIS OF ORTHOPAEDIC METAL IMPLANT COATED WITH SILVER (OMICS)

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Abstract

Implant-related infections and their management pose a major challenge in the orthopaedic field. The colonisation of bacteria and biofilm adhesion on implant surfaces may lead to infection at the implantation site. The infection risk may be overcome by applying OMICS as an alternative strategy in managing cases of implant-related infection. This study aims to evaluate OMICS's efficacy as an antibacterial implant and its biocompatibility properties in an animal model. All rabbits were implanted with OMICS as well as conventional plates and screws. The implanted tibia was excised en bloc and evaluated using microbiological swab and histological analysis for any effects of infection and its biocompatibility respectively. After three and six weeks of post-implantation, microbial analysis showed that no colonies were noted in OMICS groups compared to control. The histological analysis showed no bone reaction with no indication of the presence of microbial in both groups. No periosteal reaction was observed at the surrounding of the implanted area in both groups. This data showed that OMICS implant had antibacterial properties, biocompatible and provided good osteoconductivity comparable to conventional plates and screws. It can be concluded that the OMICS have potential to be served as antibacterial implant to prevent bacterial infection during implantation. © Malaysian Journal of Microscopy (2023). All rights reserved.

Author Keywords

antibacterial; biocompatibility; Implant-related infection; OMICS

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