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Old Wine in new Bottles: Silver Sulfadiazine Nanotherapeutics for Burn Wound Management
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Abstract

According to the World Health Organization (WHO), ~180,000 casualties are recorded every year due to burns, majorly from low- and middle-income countries that require medical attention. For the last 5 decades, silver sulfadiazine (SSD) 1% cream has been the most widely used topical antimicrobial agent for managing burn wound infections. Although SSD is considered the gold standard therapy in burn wound management, however in the last 10 years, several studies have reported the negative impact of SSD on the wound healing process. The therapeutic potential of SSD is restricted by its poor solubility, and antimicrobial action appears only after the dissociation of SSD into silver ions (Ag⁺) and sulfadiazine (SD). Pharmaceutical researchers and industries are looking for alternative strategies to overcome the challenges and limitations of the available SSD formulation due to rising costs, extensive time commitment, and the high risk of failure associated with the de novo development of new antimicrobial drugs. Recent advances in drug delivery systems nanotechnology-based strategies have had a colossal impact on them, particularly in burn wound management. Nanoparticulate systems and nanotools could be considered as potential drug delivery approaches for burn management. This contemporary review provides an abridgment of the literature on advanced SSD nanotherapeutics and their importance in managing burns. © The Author(s) 2023.

Author Keywords

antimicrobial agent; burn wound; nanotherapeutics; silver sulfadiazine; world health organization

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