



APPLICATION OF ALOE VERA AND SILVER SULPHADIAZINE IMPREGNATED FOAMS IN BURN WOUND TREATMENT

Ifeoma Ekenna, Mabel Ndulaka, Ogbonna Okorie

Department of Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmaceutical Sciences,
University of Port Harcourt.

ifeoma.ekenna@uniport.edu.ng, +2348064389282,

Background

Burn injuries have long been a persistent public health concern, capable of causing enduring physical and psychological consequences when not adequately managed. The primary goals of burn wound management encompass pain relief, infection prevention, trauma minimization, and scar and contracture reduction. Aloe vera gel (AVG) has been shown severally to be useful in the treatment of burn wounds, silver sulfadiazine (SSD) has stood as the gold standard antibiotic in burn injury management and foam dressings create and maintain a moist wound environment which is essential for the optimal wound healing process. In contrast, direct application of medications may dry out the wound, which can impede healing. This study investigates the effectiveness of SSD and AVG extract impregnated medical-grade polyurethane foam for managing second degree burn injuries in albino Wistar rats.

Methods

In this experimental study, standardized burn wounds were induced in a rat group and categorized into seven treatment groups using a randomized study method. Group A received 1% SSD, Group B received 80% AVG, Group C received 80% AVG and 0.5% SSD, Group D received 80% AVG and 1% SSD, Group E received 40% AVG and 1% SSD, Group F (positive control) received Allevyn® and Group G (negative control) received no treatment. The study assessed tissue healing through histological studies.

Results

The incorporation of AVG and SSD into medical-grade polyurethane foam (Groups C, D, and E) led to an accelerated wound healing rate compared to the control groups (Groups F and G) and the individual treatment groups (Groups A and B). Importantly, all groups containing AVG extract exhibited a higher re-epithelialization rate when compared to the individual SSD group and the control groups.

Conclusions

This study provides compelling evidence of the synergistic effect of AVG and SSD in the treatment of burn wounds. The integration of these two components into medical-grade polyurethane foam enhances wound healing, prevents infection, and improves re-epithelialization in burn injuries. These findings hold promise for the development of more effective burn wound management strategies, potentially minimizing the long-term physical and psychological consequences of burn injuries.