Evaluation of the Potential for Improved Wound Healing Through the Usage of a Topical Resveratrol Preparation

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INTRODUCTION: Full thickness wounds are a burden to the medical population. Many conservative wound treatment regiments exist. Recently, a grape seed extract known as resveratrol has gained popularity in the media. Previous studies suggest that resveratrol may impact wounds by up regulation of VEGF.[1,2] The aim of this study is to evaluate if a topical resveratrol preparation can speed wound healing and reduce scarring.

MATERIALS AND METHODS: In this prospective controlled study, three pigs were anesthetized before each receiving twenty full thickness excisional wounds on their back skin. Wounds were divided into five groups. Each group received treatment with one of the following: low (2 mg/ml), medium (10 mg/ml), or high (50 mg/ml) concentration of topical resveratrol, silver sulfadiazene (SSD), or a control carboxymethyl cellulose gel. Full thickness punch biopsies and digital images of each wound were obtained at 3 days, 7 days, 2 weeks, 3 weeks, 4 weeks, and 6 weeks post wound creation. A blinded evaluator performed histological evaluation.[3] Digital planimetry software was used to analyze the area of each wound at each time interval.

RESULTS: A total of 180 biopsies were analyzed. The average histological score for the treatment group (14.68) was lower than that of the control group (16.12) and the SSD group (18.14). However, this trend was not statistically significant ($p=0.09$). The low (15.82), medium (13.68), and high (14.58) resveratrol concentrations received histological scores less than the control (16.12) or SSD (18.14) groups. Again, this trend did not reach statistical significance ($p=0.189$). A total of 420 digital images were analyzed for wound surface area, and percent change of that area over time. The treatment group experienced a statistically significantly greater reduction in area (88.4%) compared to the control (86.9%) or SSD (77.2%) groups at the last photographed time period ($p=0.000$).

CONCLUSION: Topical resveratrol use in full thickness wounds can lead to greater reduction of wound size. This is especially true for low and medium concentrations of resveratrol, but is not the case for a high concentration of resveratrol in our series. In addition, topical resveratrol may demonstrate a benefit on the histological level with regard to scarring of wounds. However, additional studies need to be performed to determine if this trend amounts to significance.

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