

The Effects of Spark Plasma on Infectious Wound Healing

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Abstract : Given the global significance of treating infectious wounds, the goal of this study is to use spark plasma as a new treatment for infectious wounds. To generate spark plasma, a high-voltage (7 kV) and high-frequency (75 kHz) source was used. Infectious wounds in the peritoneum of mice were divided into control and plasma-treated groups at random. The plasma-treated animals received plasma radiation every 4 days for 12 days, for 60 seconds each time. On the 15th day after the first session, the wound in the plasma-treated group had completely healed. The spectra of spark plasma emission and tissue properties were studied. The mechanical resistance of the wound healed in the plasma treatment group was considerably higher than in the control group ($p < 0.05$), according to the findings. Furthermore, histological evidence suggests that wound re-epithelialization is faster in comparison to controls. Angiogenesis and fibrosis (collagen production) were also dramatically boosted in the plasma-treated group, whereas the stage of wound healing inflammation was significantly reduced. Plasma therapy accelerated wound healing by causing considerable wound constriction. The results of this investigation show that spark plasma has an influence on the treatment of infectious wounds.

Keywords : infectious wounds, mice, spark plasma, treatment

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