# Enhancing Wound Healing in Diabetic Foot Ulcers Using Helium Cold Atmospheric Plasma: A Clinical Study

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**ABSTRACT**

**Introduction:** Diabetic foot ulcers (DFUs) are a common and serious complication of diabetes, often leading to prolonged healing times and an increased risk of amputation. Cold atmospheric plasma (CAP) has shown promise as a novel, non-chemical therapy to enhance wound healing. This study evaluated the effect of helium-based CAP therapy on wound contraction in patients with DFUs of varying Wagner grades.

**Materials and Methods:** This open-label randomized controlled trial included 60 patients with DFUs. Participants received either standard care or standard care plus CAP therapy using the Life Plas@ Med device (Plasma Technology Development Company). CAP treatment was applied twice weekly for three weeks. The wound area was measured weekly to assess wound contraction, which was the primary outcome of the study.

**Results and Discussion:** Both groups showed a reduction in wound size over the study period; however, the CAP group demonstrated significantly greater wound contraction compared to the control group. CAP therapy accelerated healing across different ulcer grades, indicating its broad applicability in DFU management.

**Conclusion:** The findings indicate that CAP therapy enhances wound healing in patients with DFUs and may serve as an effective adjunctive treatment. Further investigations should focus on long-term efficacy assessment.

*Keywords:* Cold atmospheric plasma, Diabetic foot ulcers, Wound contraction, Wound healing

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