

FEDBD Plasma, A Promising Approach for Skin Rejuvenation

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Abstract : Cold air plasma could have a variety of effects on cells and living organisms and also shows good results in medical and cosmetic cases. Herein, plasma floating electrode dielectric barrier discharge (FEDBD) plasma was designed for mouse skin rejuvenation purposes. It is safe and easy to use in clinics, laboratories, and homes. The effects of this device were investigated on mouse skin. Vitamin C ointment in combination with plasma was also used as a new method to improve FEDBD results. In this study, 20 Wistar rats were evaluated in four groups. The first group received high-dose plasma, the second group received moderate-dose plasma (with vitamin C cream), the third group received low-dose plasma (with vitamin C cream) for 6 minutes, and the fourth group received only vitamin C cream. This process was done 3 times a week for 4 weeks. Skin temperature was monitored to evaluate the thermal effect of plasma. The presence of reactive species was also demonstrated using optical spectroscopy. Mechanical assays were performed to evaluate the effect of plasma and vitamin C on the mechanical strength of the tissue, which showed a positive effect of plasma on the treated tissue compared to the control group. Using pathological and biometric skin tests, an increase in collagen levels, epidermal thickness, and an increase in fibroblasts was observed in rat skin, as well as increased skin elasticity. This study showed the positive effect of using the FEDBD plasma device on the effective parameters in skin rejuvenation.

Keywords : plasma, skin rejuvenation, collagen, epidermal thickness

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