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Role of Non-Thermal DBD Plasma on Cell Migration and Cell Proliferation in Wound Healing

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Plasma technology isbeing developed for a range of medical applications including wound healing. However, the effect of plasma on many cells and tissues is unclear. Cell migration and cell proliferation are very important biological processes which are affected by plasma exposure and might be a potential target for plasma therapy during wound healing treatment. In this study, we confirmed the plasma exposure time and incubation time after plasma treatment in skin fibroblast (L-929 cells) to evaluate the optimal conditions forplasma exposure to the cell in-vitro. In addition, we used a scratch method to generate artificial wound for evaluating the cell migration by plasma treatment. Where, the cells were treated with plasma and migration rate was observed by live-cell imaging device. To find the cell proliferation, cell viability assay was executed. The results of this study indicate the increased cell proliferation and migration on mild plasma treatment. The mechanisms for cell migration and cell proliferation after plasma treatment for future studies will be discussed.

Keywords: Cell migration, Cell proliferation, Fibroblast, Plasma treatment, Wound healing