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Direct Measurement of Nitric Oxide Produced from Cell Under the Atmospheric Pressure Plasma Irradiation TAKAMICHI HIRATA, CHIHIRO TSUTSUI, TOSHIFUMI KOMACHI, TAKUMI KISHIMOTO, AKIRA MORI, TOSHIAKI YAMAMOTO, MASAHIRO AKIYA, AKIRA TAGUCHI, Tokyo City University, DEPARTMENT OF BIOMEDICAL ENGINEERING TEAM, DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING TEAM, NANO CARBON BIO DEVICE RESEARCH CENTER TEAM — We performed experiments involving direct ion/radical irradiation of tissues and cells using a atmospheric-pressure plasma source for various plasma applications in biomedical engineering. When cells were irradiated by the plasma in preliminary experiments, little destruction of cell membrane due to surface interactions such as collisions or ionization of gas molecules was observed. Furthermore, direct measurements of nitric oxide (NO) concentration using a NO sensor revealed that NO was generated by plasma irradiation. Therefore, interactions due to ion/radical collisions on the culture surface appear to have a substantial effect on the proliferation of growth factors present in cells.

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