

Abstract Submitted
for the GEC17 Meeting of
The American Physical Society

Promotion of angiogenesis using Atmospheric Pressure Plasma Derived FGF-2/VEGF¹ CHIHIRO KOBAYASHI, TOSHIYA YOSHIKAWA, AKIRA MORI, TAKAMICHI HIRATA, Tokyo City University — Atmospheric pressure plasma is applied in the medical field for coagulation, sterilization, and treatment for diabetic gangrene. Direct plasma irradiation has recently been reported to promote wound healing. The aim of the present study was to clarify the mechanism by which wound healing is promoted by plasma irradiation. Therefore we focused to the nitric oxide (NO) and growth factors, which is a key component of the healing mechanism. Using an in vitro model, we investigated the effect of the atmospheric pressure plasma irradiation to mice embryonic fibroblast cell line (NIH3T3 cell) and porcine aortic endothelial cells (POAEC). We investigated expression analysis with focus on factors related to angiogenesis it was found that the transient overexpression of b-FGF and VEGF are observed after the plasma irradiation. Furthermore, in order to investigate the function of nitric oxide synthases (NOS), we conducted an inhibition experiment using a NOS inhibitor. These data suggest that direct plasma irradiation involving ion/radical may promote endogenous NO and b-FGF/VEGF and it promotes angiogenesis activation.

¹This study was supported by a Grant-in-Aid for Scientific Research on Innovative Areas (No. 24108010) from the Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT)

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Date submitted: 02 Jun 2017

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