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Healing mechanism clarification of plasma irradiated wound by quantification and detection of superoxide dismutase (SOD) activity¹ RISACO TANAKA, SEIRA SHIGEKUNI, SAYAKA MATSUDA, TAKAMASA TAMURA, CHIHIRO KOBAYASHI, AKIRA MORI, TAKAMICHI HIRATA, Graduate School of Engineering, Tokyo City University — Plasma medicine is currently applied in clinical settings, in many cases, without any explanation for its mechanism. This study therefore aims to elucidate the mechanism of healing by plasma irradiation in burn injury, by focusing on plasma wound healing. In preceding studies, it has been reported that atmospheric pressure plasma generates reactive oxygen species (ROS) and that mild oxidative stress promotes cell proliferation, which suggests that oxidative stress may play a major role in the mechanism in which plasma irradiation promotes healing burn injury. Based on these, we first measured superoxide dismutase (SOD) activity, an oxidative stress marker, at burn injury sites that were artificially created on the back of rats. We now report the results of comparative investigation of differences in SOD activity in case of non-treatment and plasma irradiation. In particular, we focused on the change in SOD activity over time. From the result, it is suggested that SOD activity of in vivo changes in proportion to the time course.

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