Abstract Submitted
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Analysis of non-thermal plasma-induced cell injury in human lung cancer cell lines[1] HIROFUMI KURITA, KAORI SANO, MOTOI WADA, Toyohashi University of Technology, KAZUE MIZUNO, RYO ONO, The University of Tokyo, HACHIRO YASUDA, KAZUNORI TAKASHIMA, AKIRA MIZUNO, Toyohashi University of Technology — Recent progress of biomedical application of atmospheric pressure plasma shows that the biological effects are mainly due to reactive oxygen and nitrogen species (RONS) in liquid produced by the plasma exposure. To elucidate the cellular responses induced by exposure to the plasma, we focused on identification and quantification of reactive chemical species in plasma-exposed cell culture medium, and cell injury in mammalian cells after treatment of the plasma-exposed medium. In this study, we examined human lung cancer cell lines. The contribution of H_2O_2 to the cellular responses was considered. Here, an atmospheric pressure plasma jet (APPJ) sustained by a pulsed power supply in argon was used. After APPJ exposure to cell culture medium, RONS detection in liquid was conducted. It showed that OH radical, $ONOO^-$, NO_2^-, NO_3^-, and H_2O_2 were produced in the plasma-exposed medium. Cellular responses of human lung cancer cell lines to the plasma-exposed medium in a concentration-dependence manner were also studied. It showed that the plasma-exposed medium and the H_2O_2 treatment gave similar reduction in viability and induction of apoptosis.

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