

Abstract Submitted
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Proliferation enhancement of budding yeast and mammalian cells with periodic oxygen radical treatment¹ YOSUKE MORI, JUN KOBAYASHI, TOMIYASU MURATA, Meijo University, HIROSHI HAHIZUME, MASARU HORI, Institute of Innovation for Future Society, Nagoya University, MASAFUMI ITO, Meijo University — Recently, nonequilibrium atmospheric-pressure plasmas have been intensively studied for biological applications. However, the each effect of species in plasmas to biological tissue has not been clarified yet because various factors exist in the plasmas. Accordingly, we have studied effects of atomic oxygen dose on cell growth such as budding yeast and mouse NIH3T3 fibroblasts of mammalian cells. Both of cells were suspended with PBS, and treated using oxygen radical source. In order to prevent the radicals from reacting with the ambient air, the treatment region was surrounded by a plastic cover and purged with Ar. The proliferative effect of 15% was observed at the $O(^3P_j)$ dose of around $1.0 \times 10^{17} \text{cm}^{-3}$ in NIH3T3 cells as well as in yeast cells. Moreover, periodic oxygen treatment enhanced the effect in budding yeast cells. The best interval of periodic oxygen radical treatment was around 2 hours, which is almost the same period as that of their cell cycle. With the optimum interval time, we have investigated the effect of the number of the treatments. As the number of treatments increases, the growth rate of budding yeast cells was gradually enhanced and saturated at thrice treatments.

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Yosuke Mori
Meijo University

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