

Abstract Submitted
for the GEC15 Meeting of
The American Physical Society

Antitumor effect of synergistic contribution of nitrite and hydrogen peroxide in the plasma activated medium NAOYUKI KURAKE, HIROMASA TANAKA, KENJI ISHIKAWA, KAE NAKAMURA, HIROAKI KAJIYAMA, FUMIAKI KIKKAWA, Nagoya University, TAKASHI KONDO, Toyama University, MASAOKI MIZUNO, KEIGO TAKEDA, HIROKI KONDO, MAKOTO SEKINE, MASARU HORI, Nagoya University — Non-equilibrium atmospheric pressure plasmas (NEAPP) have been attracted attention in the noble application of cancer therapy. Although good effects of the Plasma-Activated-Medium (PAM) such as the selective antitumor effect and killing effect for the anticancer agent resistant cells were reported, a mechanism of this effect has not been still clarified yet. In this study, we have investigated a contribution of the reactive nitrogen and oxygen species (RNOS) generated in PAM such as hydrogen peroxide and nitrite. Those species generated in the PAM quantitatively measured by light absorbance of commercial reagent. Moreover, viable cell count after cell culture with those RNOS intentionally added medium or PAM were also measured by MTS assay. Our NEAPP source generated hydrogen peroxide and nitrite with the generation ratio of $0.35 \mu\text{M}/\text{s}$ and $9.8 \mu\text{M}/\text{s}$. In those RNOS, hydrogen peroxide has respective antitumor effect. On the other hands, nitrite has no antitumor effect singly. But, synergistically enhance the antitumor effect of hydrogen peroxide. Moreover, this effect of those RNOS also contribute for the selectively cancer killing effect of PAM.

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Date submitted: 19 Jun 2015

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