

Abstract Submitted  
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**Effects of gas-phase reactive species on generation of hydrogen peroxide and nitrite ion in plasma-activated medium** KEIGO TAKEDA, Meijo Univ., NAOYUKI KURAKE, KENJI ISHIKAWA, HIROMASA TANAKA, MAKOTO SEKINE, MASARU HORI, Nagoya Univ. — Plasma-activated medium (PAM) which is cell-culture medium irradiated by atmospheric pressure plasma jet (APPJ) has strong antitumor effects on the various kinds of cells. The irradiation of APPJ to the medium generates reactive oxygen and nitrogen species (RONS) in the aqueous-phase. The contributions of RONS in the PAM have been investigated to clarify the mechanism of selective killing of cancer. Hydrogen peroxide is well-known as one of reactive oxygen species to affect the cell response. Moreover, the synergic reactions of hydrogen peroxide and nitrite ion achieves the antitumor effect [1]. In order to investigate the reactions leading to the productions of hydrogen peroxide and nitrite ions in the medium, the gas-phase atomic and molecular radicals and radiations emitted from an AC excited Ar APPJ were measured by VUV absorption, laser induced fluorescence, optical emission spectroscopy. Moreover, the generated radicals in the aqueous-phase were measured by ESR techniques with spin-trapping. On the basis of the measurement results of reactive species, we will discuss the production pathways of hydrogen peroxide and nitrite ion in the gas-phase, aqueous-phase, and gas-liquid interface. [1] N. Kurake, et al., Arch. Biochem. Biophys., 605 (2016) 102.

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