## Abstract Submitted for the GEC20 Meeting of The American Physical Society

Physicochemical investigation of plasma activated liquids CAMELIA MIRON, YANG LIU, NAOYUKI IWATA, KENJI ISHIKAWA, HIRO-MASA TANAKA, Center for Low-temperature Plasma Sciences, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601 Japan, SHINYA TOYOKUNI, Department of Pathology and Biological Responses, Graduate School of Medicine, Nagoya University, Tsurumai-cho, Showa-ku, Nagoya 466-8550 Japan, MASAAKI MIZUNO, Center for Advanced Medicine and Clinical Research, Nagoya University Hospital, Tsurumai-cho 65, Showa-ku, Nagoya 466-8550 Japan, MASARU HORI, Center for Low-temperature Plasma Sciences, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601 Japan — Biological activity of plasma activated liquids by atmospheric pressure plasmas has been investigated to identify the composition and formation pathways of chemically active species formed in plasma, depending on the plasma source configuration. Two types of plasma devices operated at different voltage repetition frequency (60 Hz and 9 kHz) for the treatment of solutions were used, to elucidate the mechanism of the chemically active species formation by using liquid-chromatography mass-spectrometry (LC-MS/MS), nuclear magnetic resonance (NMR), and electron spin resonance (ESR) measurements. In plasma treated glucose solutions, the formation of intermediate products was analyzed. The cancer cells enhance glucose metabolism in a manner that is distinct from that of cells in normal tissues. Oncogenic mutations result in glucose uptake, exceeding the bioenergetic demands of cell growth. We will discuss the effect of plasma treated glucose solutions on the metabolic pathways responsible for the cancer cell death.

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