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Generation of reactive oxygen and nitrogen species and its effects on DNA damage in lung cancer cells exposed to atmospheric pressure helium/oxygen plasma jets TAE HUN CHUNG, HEA MIN JOH, SUN JA KIM, JI YE CHOI, TAE-HONG KANG, Dong-A University — We investigated the effects of the operating parameters on the generation of reactive oxygen and nitrogen species (RONS) in the gas and liquid phases exposed to atmospheric pressure a pulsed-dc helium plasma jets. The densities of reactive species including OH radicals were obtained at the plasma-liquid surface and inside the plasma-treated liquids using ultraviolet absorption spectroscopy and chemical probe method. And the nitrite concentration was detected by Griess assay. The data are very suggestive that there is a strong correlation among the production of RONS in the plasmas and liquids. Exposure of plasma to cancer cells increases the cellular levels of RONS, which has been linked to apoptosis and the damage of cellular proteins, and may also indirectly cause structural damage to DNA. To identify the correlation between the production of RONS in cells and plasmas, various assay analyses were performed on plasma treated human lung cancer cells (A549) cells. In addition, the effect of additive oxygen gas on the plasma-induced oxidative stress in cancer cells was investigated. It was observed that DNA damage was significantly increased with helium/oxygen plasma compared to with pure helium plasma..

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