

Abstract Submitted  
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**The interaction of atmospheric pressure plasma jets with cancer and normal cells: generation of intracellular reactive oxygen species and changes of the cell proliferation and cell cycle**<sup>1</sup> TAE HUN CHUNG, HEA MIN JOH, SUN JA KIM, SUN HEE LEEM, Dong-A University — The possibility of atmospheric pressure plasmas is emerging as a candidate in cancer therapy. The primary role is played by reactive oxygen species (ROS), UV photons, charged particles and electric fields. Among them, intracellular ROS induced by plasma are considered to be the key constituents that induce cellular changes and apoptosis. In this study, the effects of atmospheric pressure plasma jet on cancer cells (human lung carcinoma cells) and normal cells (embryonic kidney cells and bronchial epithelial cells) were investigated. The plasma treatment was performed under different working gases, applied voltages, gas flow rates, and with and without additive oxygen flow. Using a detection dye, we observed that plasma exposure leads to the increase of the intracellular ROS and that the intracellular ROS production can be controlled by plasma parameters. A significant ROS generation was induced by plasma exposure on cancer cells and the overproduction of ROS contributes to the reduced cell proliferation. Normal cells were observed to be less affected by the plasma-mediated ROS and cell proliferation was less changed. The plasma treatment also resulted in the alteration of the cell cycle that contributes to the induction of apoptosis in cancer cells. The selective effect on cancer and normal cells provides a promising prospect of cold plasma as cancer therapy.

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