

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Generation of reactive oxygen and nitrogen species in cancer and normal cells exposed to atmospheric pressure plasma jets: Selectivity and Effects of the operating parameters. TAE HUN CHUNG, SUN JA KIM, HEA MIN JOH, TAE HONG KANG, Dong-A University — Exposure of cold atmospheric plasma to cancer cells increases the cellular levels of reactive oxygen and nitrogen species (RONS), which has been linked to apoptosis and the damage of cellular proteins, and may also indirectly cause structural damage to DNA. We investigated the effects of the operating parameters of plasma jet on the generation of the extracellular and intracellular RONS. Cold plasma-induced differential effects between normal and cancer cells were comparatively examined. Melanoma and normal skin fibroblast cells (counterparts, isolated from the same patient) were used for plasma-cell interactions. The remarkable increase of intracellular reactive oxygen species (ROS, such as nitric oxide (NO), hydroxyl radicals (OH), and hydrogen peroxides (H₂O₂)) production only occurred in melanoma cancer cells rather than in normal 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.

Tae Hun Chung
Dong-A University

Date submitted: 18 Jul 2018

Electronic form version 1.4