

## Preferential Killing of Human Lung Cancer Cell Lines with Mitochondrial Dysfunction by Non-Thermal DBD Plasma

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The distinctive cellular and mitochondrial dysfunctions of a human epithelial lung cancer cell line (H460) from a human lung fibroblastic normal cell line (MRC5) have been studied by dielectric barrier discharge (DBD) plasma treatment. The DBD plasma device have generated large amount of H<sub>2</sub>O<sub>2</sub> and NO<sub>x</sub> in culture media which is dependent on plasma exposure time. It is found that the cell number of lung cancer cell H460 has been reduced more than the lung normal cell MRC5 as being increased exposure and incubation time. Also these both cell lines have showed mitochondria fragmentation under 5 minutes' plasma exposure, which is a clue of apoptosis. It is noted in this study that AnnexinV staining has showed not only early apoptosis, but also late apoptosis in lung cancer cell H460. Mitochondria enzyme activity and ATP generation have been also much reduced in lung cancer cell H460. Their mitochondrial membrane potential ( $\Delta\psi_m$ ) has been found to be reduced in magnitude and shifted to the induced-potential level of cccp, while MRC5 mitochondrial membrane potential has been shifted slightly to that. These distinctively selective responses of lung cancer cell H460 from lung normal cell MRC5 gives us possibility of applying plasma to cancer therapy.

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