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Plasma-cell interactions: apoptosis in cultured human breast cancer cells by a pulsed atmospheric pressure plasma jet TAE HUN CHUNG, SUN JA KIM, Dong-A University, HEA MIN JOH, SE HWAN BAE, SUN HEE LEEM — Atmospheric pressure plasma jet sources driven by pulsed dc voltage with repetition rate of several tens of kilohertz were specially fabricated and characterized. Using this plasma jet, apoptotic effect on cultured human breast cancer cells (MCF-7) was explored. The effect of plasma-forming gases (helium and argon) and additive O_2 gas on the cell treatment was investigated. The apoptotic changes in cells with plasma treatment were detected by DAPI staining and fluorescence staining assay, and also by flow cytometry. A significant portion of these cells was observed to exhibit the apoptotic fragmentation. Apoptosis is mediated by a various range of cell signals, both extracellular and intracellular. These signals may positively or negatively induce apoptosis. With monospecific antibodies, immunoblotting, and immunohistochemical methods, the relative level of apoptosis-regulating proteins in cell lysates can be detected. Biochemical mechanism of the plasma-cell interaction using human antibody assay will be also addressed. This plasma jet can provide an effective mode of human breast cancer cell therapy.

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