

HYPERTROPHIC CELL TREATMENT FOR APOPTOSIS INCUCEMENT BY REMOTE PLASMA

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There are diverse types of hypertrophic cell in mammalian tissue. Most of them are in abnormal state of cell growth resulting in negative effect on the specific function or structure. Suppression of hypertrophic cell growth or removal of existing hypertrophic cell without necrotic neighboring tissue through non surgical method that can substitute excision process is required.

In this work, feasibility of suppression and removal of hypertrophic cell by remote plasma treatment was tested. Simple parallel plate type DBD (Dielectric Barrier Discharge) reactor was used. AC power with frequency of 1~20 kHz was tested. To remove streamer generation, electrode gap and electric power condition was controlled. Various discharge gas such as He / Air / N₂ were tested. Electric power consumed was controlled not to over 100mW level. Total energy used was controlled by the level of electric power and treatment time.

Hypertrophic fibroblast cell extracted and cultured from humane skin was used for experiment. Cells were cultured on the rectangular dish for the ease of direct treatment.

Trypan blue exclusion test was used at first to confirm the death rate of treated cells. And then cell apoptosis was assayed through TUNNEL system. Correlation between treatment condition and inducement of apoptosis was analyzed. ROS (Reactive Oxygenate Species) generation in treated cells were also verified by ROS detection kit. Endogenous ROS within cell by interaction of cell and plasma was confirmed. ROS is known that it is involved in the activation phase of apoptosis. With the results, it was confirmed that plasma interaction of hypertrophic cell can induce ROS generation that results in cell apoptosis.