【ニュース】

シュナイドテック株式会社は麻布大学獣医学部生化学教室と共同研究を行ってまいりました。

この度、新しい癌治療に関する研究成果が日本放射線影響学会において発表されます。

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【発表学会】

日本放射線影響学会第 63 回大会

会期：　令和 2 年 10 月 15 日（木）～17 日（土）

会場：　福島県福島市・コラッセふくしま

【演題名】

ISM 帯マイクロ波 は熱ショックタンパク質非依存的に抗腫瘍作用を示す

Anti-cancer efficacy of ISM-band MW hyperthermia via HSP-independent cytotoxic mechanism

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【要旨】

＜BACKGROUND＞

Hyperthermal therapy is applied to cancer therapy. Mild hyperthermal treatment (up to 43° C) induces apoptosis only on cancer tissue. Current hyperthermal therapy is employing 8 MHz microwave and this hyperthermal therapy takes 60-80 min to build up the temperature. In a previous study, we developed an ISM-band microwave device capable of rapid and localized heating leading to more effective hyperthermia. Heat shock proteins (HSPs) are a major obstacle for cancer hyperthermal treatment. It is well known mild hyperthermal therapy significantly induces HSPs, and HSPs decrease the therapeutic efficacy of hyperthermal treatment. In this study, we investigate whether ISM-MW induces HSP, and the involvement of HSPs on the cytotoxic effect of ISM-MW.

＜INSTURUMENT&METHODS＞

Mouse melanoma B16F10 cell was used and the surviving fraction was examined by a colony formation assay. A Hot incubator was used as heat treatment, and the ISM-MW generator was used as ISM hyperthermia. Genes and proteins expression of HSPs were examined by RT-qPCR and Western blotting. Further, Pre-heated cells were subjected to conventional hyperthermia or MW irradiation hyperthermia.

＜RESULTS＞

The gene and protein expressions of HSP40 and HSP70 were increased by heat treatment and ISM-MW, whereas HSPs induction after ISM-MW is significantly lower than heat treatment. Furthermore, pre-heat treatment decreased cytotoxicity of heat treatment, however, cytotoxicity of ISM-MW did not decrease after pre-heat treatment.

These results suggested that hyperthermia using ISM-band microwave barely induced the HSPs, and exerted effective cytotoxic effect even in HSP-induced condition. Therefore, ISM-band MW hyperthermia can provide effective anticancer therapy by repeated irradiation.