

The analyses of bystander effect induced by X ray irradiation in glioma cell

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Abstract

Recently, it was considered that the cell lethal effect by low dose radiation was due to bystander effect. Cells irradiated low dose radiation secreted something liquid factor that induced lethal effect by signal transduction. So far, we suggested that radiation induced bystander effect is closely relative with sphingomyelinase. To analyze mechanism between activation of sphingomyelinase and induction of bystander effect, in this study we investigated divalent metal included in the sphingomyelinase using PIXE analysis. Purified sphingomyelinase form Extracellular medium after irradiation (6 Gy) using immunoprecipitation increase for 15 min and increased for 30 min after irradiation. Then, when divalent metals included in the purified sphingomyelinase using PIXE analysis were analyzed, zinc element and calcium element were observed, and fluctuation of zinc element concentration after irradiation corresponded with purified sphingomyelinase value. These results indicate sphingomyelinase secreted by radiation include zinc element and sphingomyelinase is activated by binding zinc element.