ABSTRACTS

243 Increase of heat sensitivity by the induction of HSP72 with deletion of its ATP-binding domain

In the present study, the effect of HSP72 with deletion of its ATP-binding domain on heat shock-induced cell death was investigated. The mutant HSP72 gene was ligated into Ecdysone inducible vector and the vector was transfected into NCI-H1299 cells to establish 99 Δ HSP-SP1 cells. The HSP72 deletion protein (Δ HSP) was induced by ponasterone A (PA) treatment. We found that growth of 99 Δ HSP-SP1 cells significantly suppressed by the expression of Δ HSP protein. Surviving fraction of 99 Δ HSP-SP1 cells by the treatment with PA and heat shock (43°C, 2hr) was 0.5 and 0.24, respectively, and it decreased to 0.06 when cells were treated with both PA and heat shock. Our results show that induction of HSP72 with deletion of its ATP-binding domain potentiate heat sensitivity, caused by inhibition of cell growth and abrogation of the function of normal HSP72 induced by heat shock.

244 BNCT Effect of BPA-ol, a Derivative of BPA, and Enhancement by Hyperthermia
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[Purpose] BPA derivative BPA-ol which modified the side-chain of the molecule to raise the water solubility, was synthesized, while the property of intracellular accumulation is maintained. The BNCT effect was investigated. [Materials and Methods] BSH, BPA and B-10 enriched boric acid were used as reference compounds. The SCCVII tumor cells were used in the study. Thermal neutrons were irradiated to the cells. The hyperthermia treatment of 42.5°C for 60 min was applied by water bath, and the effect was evaluated by colony formation assay. [Result and Conclusion] (1) The order of BNCT effect is as follow: BPA-ol > BPA = boric acid > BSH. BPA-ol seemed to actively accumulate in the cell, because the intracellular concentration of the boracic acid was considered being equal to that in the culture medium. (2) There was no difference in the BNCT effect between dl-BPA-ol and l-BPA-ol. (3) The hyperthermia treatment (42.5°C - 60 min) raised BNCT effects of BPA-ol to about 3 times. (4) About 3 times of BNCT effect was observed even for in vivo tumors.

245 Tumor Vasculature and PO2 Distributions Depend on Implantation Site

We measured the oxygen partial pressure (pO2) distribution and visualized the 3D architecture of microvessels networks in tumor tissues which implanted into the flank or the hind foot of mice. Oxygen levels are higher found in NFSa Fibrosacromas implanted into the flank than the hind foot. The vasculature in the hind foot is scarce, while that into the flank is abundant. These results indicate that tumors of the same cell line can exhibit variations in their tumor vasculature and tissue oxygenation.