

S10-1 Development of ultrasonic cancer therapy using ultrasound sensitive liposome

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Ultrasound (US) has been utilized as a useful tool for diagnosis and therapy. US mediated drug and gene delivery is paid to attention as non-invasive system. The combination of US and microbubbles generated microjet stream by inducing disruption of bubbles and resulted in enhancing permeability of cell membrane. This phenomenon has been utilized as driving force for drug and gene delivery. Recently, we developed ultrasound sensitive liposome (Bubble liposome (BL)) containing perfluoropropane gas. US combined with BL could effectively transfer gene in vivo compared to conventional cationic liposomes. Using this method, we succeeded to obtain a therapeutic effect in cancer gene therapy with Interleukin-12 corded plasmid DNA. Therefore, it is expected that US combined with BL might be a useful non-viral vector system. On the other hand, higher intensity US combined with BL can generate strong microjet stream and heat. This phenomenon has a potency to kill cancer cells. We also study about applying higher intensity US combined with BL to hyperthermia for cancer. In fact, higher intensity US combined with BL suppressed tumor growth in tumor bearing mice. From these results, the fusion of liposomal and ultrasound technologies would be an important for establishment of advanced cancer therapy.