Dynamics of the outer shell improvement type sustained-release agent

—Liposomal anti-tumor agent—

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Abstract

A negative aspect of cancer chemotherapy is dosage dependence. We have determined that cancer cell growth is inhibited even if we reduced the amount of medicine by 100-1000X through injection of the anti-tumor agent around the tumor. In animal experiments, problems with this method include a delay in injection wound healing and the requirement of anesthesia for each injection. Therefore, in this study, we examined the methods of administration of an anti-tumor agent to reduce the number of injections, and studied a sustained release agent to control medication release.

In this study, we constructed a Hard Type Liposome controlled release medication that was designed to control release for 48 hours after infusion. We also constructed a Wrapped Type Liposome controlled release medication that controlled the release start after infusion for two hours. After administration of these two liposomes, normal liposomes and an anti-tumor agent water solution, we examined the pharmacokinetics (the transition from the tongue to a submandibular lymph node) of the platinum using PIXE.

The Hard Type and Wrapped Type Liposomes showed a quantity of transition similar to the cisplatin solution and Standard Type Liposomes. Over 2X the concentration of platinum (2.6μg/g) in the local tissue was detected that shifted to the submandibular lymph node, a lingual regional lymph node.

Continuing experiments will examine the prolongation of the controlled release time, the prevention of the initial explosion, the vulnerary relation with the time from implantation, and the cancer cell growth suppression in the experimental tumor.