T17-036

Tohoku University's Invention

Lymphatic drug delivery system

Administration of little amount of prepared liquid drug shows excellent antitumor efficacy!

Introduction

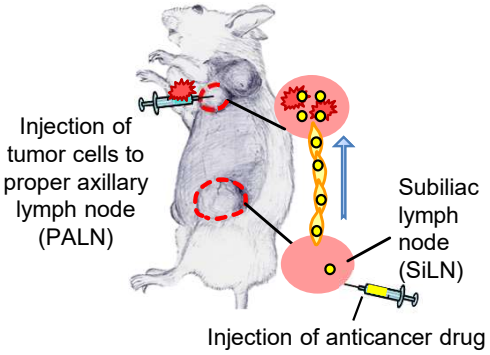
Many cancers spread to regional lymph nodes through the lymphatic vessels. Intravenous administration of chemotherapeutic agents through blood vessels is a common treatment for metastatic lymph nodes. Drugs administered intravenously leak from the capillaries into the interstitium in peripheral tissues and are reabsorbed by the blood vessels and lymphatic vessels. However, the lymphatic system is characterized by the preferential uptake of large-sized particles and polymers, and thus anticancer drugs, which are generally small molecules, are considered difficult to deliver to the lymphatic system.

A modern drug delivery system by lymphatic vessels can deliver drugs to a target lymph nodes directly. In this way, not only these lymph nodes, but also the downstream lymphatic system can be treated properly.

This invention shows that a liquid preparation having a particular osmotic pressure range provided high drug retention in the target lymph node, high delivery to the downstream lymph node, and excellent drug efficacy.

The investigation for diseases other than cancers is being researched with data unpublished.

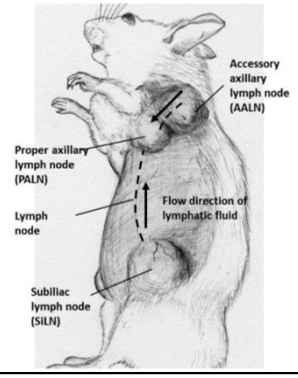
Anticancer effect by lymphatic drug delivery system



On the 3rd day after injection of the tumor cells to PLAN (Day 0), 200μL anticancer drug was administrated to SiLN.

On the 9th day, a pathological evaluation was made for PLAN.

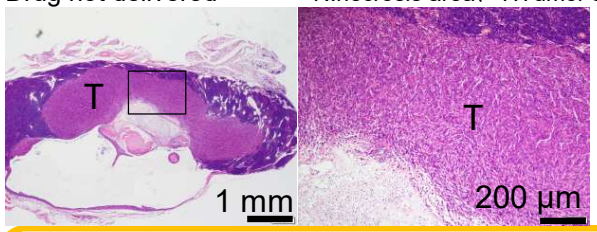
<This model mouse>
Having comparable size of lymph nodes as human being.



<Pathological images at PLAN>

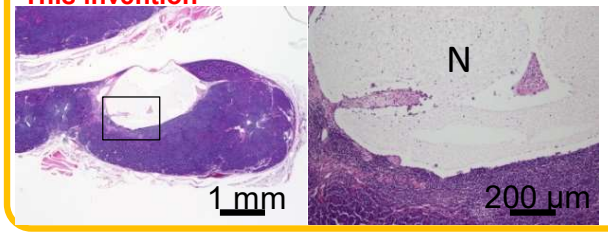
Drug not delivered

N:necrosis area、T:Tumor area



Tumor cells grew in the marginal sinus of the lymph node and the parenchymal equivalent of the lymph node.

This invention



Tumor cells grew in the marginal sinus of the lymph node and the parenchymal equivalent of the lymph node, and extensive necrotic foci were recognized. No tumor cells remained due to the marked antitumor effect.

Patent Data Sheet

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