Passive and specific targeting of lymph nodes: the influence of the administration route

Titre	Passive and specific targeting of lymph nodes: the influence of the administration route
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Mots-clés	Lipid nanocapsules [5], lymph-node targeting [6], subcutaneous administration [7]
Résumé en anglais	Patients diagnosed with an advanced-stage cancer present a dismal prognosis due to the presence of metastases. From the primary tumor, the cancer cells are disseminated via lymphatic circulation; metastases develop initially in lymph nodes. Therefore, the targeting of lymph nodes needs to be improved in the design of future chemotherapy, and one way to ensure this targeting is by using the subcutaneous (SC) route. Using lipid nanocapsules (LNCs) (40 nm and fluorescently-labeled with DiD) as nanocarriers, a correlation between the SC injection site (behind the neck, the right and left flanks, and above the tail) for LNC administration and specific lymph node accumulation (left and right cervical, axillary and inguinal lymph nodes) was achieved for Sprague-Dawley rats. The pharmacokinetic and biodistribution profiles confirmed the absence of LNCs in systemic circulation after SC administration due to the optimal size of the LNCs. With appropriate SC administration, LNCs can accumulate in specific lymph nodes, whereas IV administration led to a weak accumulation of LNCs in all lymph nodes. Specific accumulation followed the lymph flow: bottom-up from the lower to upper limbs and top down from the head, with two lymph circulation partitions: right upper limb and the rest. Administration above the tail presented high inguinal and axillary lymph node accumulation whereas weak accumulation was observed after administration behind the neck. LNCs administered in the left flank only accumulated in the left inguinal and axillary lymph nodes, whereas left and right inguinal and axillary lymph nodes presented accumulation after administration in the right flank. Cervical lymph nodes, in the opposite direction of lymph flow, were never targeted after SC administration, whatever the injection site.
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Liens
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