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published in cooperation with CLINAM – European Foundation for Clinical Nanomedicine
European Journal of Nanomedicine is covered by the following services: Celdes, CNKI Scholar (China National Knowledge Infrastructure), CNPIEC, EBSCO - TOC Premier, EBSCO Discovery Service, Elsevier - SCOPUS, Google Scholar, J-Gate, Naviga (Softweco), Paperbase, Pirabase, Polymer Library, Primo Central (ExLibris), SCImago (SJR), Summon (Serials Solutions/ProQuest), TDOne (TDNet), Ulrich's Periodicals Directory/ulrichsweb, WorldCat (OCLC)

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ISSN 1662-5986 ∙ e-ISSN 1662-596X

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TYPESETTING
Compuscript Ltd., Shannon, Ireland

PRINTING
Franz X. Stückle Druck und Verlag e.K., Ettenheim

Printed in Germany

COVER ILLUSTRATION
From the primary tumor, cancer cells are disseminated via lymphatic circulation and metastases develop initially in lymph nodes. To improve chemotherapy protocols, a promising way to deliver drugs in lymph nodes should be the subcutaneous administration of drug-loaded nanocarriers. Using lipid nanocapsules as nanocarrier model, a correlation between the subcutaneous injection sites: behind the neck (red star), the right (blue star) and left flanks (green star), and above the tail (orange star) for administration and specific lymph node accumulations: left and right cervical, axillary and inguinal lymph nodes (same colors used for lymph nodes targeting) was achieved for Sprague Dawley rats. The pharmacokinetic and biodistribution profiles confirmed the absence of lipid nanocapsules in systemic circulation after subcutaneous administration due to the optimal size of the nanocarrier model (about 40-nm diameter). With appropriate subcutaneous administration, lipid nanocapsules can accumulate in specific lymph nodes, whereas intravenous administration led to a weak accumulation of lipid nanocapsules in all lymph nodes. This passive but 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 (grey arrows). A personalized therapeutic scheme for patients could be considered when specific lymph node targeting is needed. In addition, lipid nanocapsules were sequestered in the lymphatic system, without returning to the blood circulation. The limitation of side effects, often due to excessive drug dosage to overcome liver metabolization, could be expected.

For more information on this topic please read the article on Passive and specific targeting of lymph nodes: the influence of the administration route by Marion Pitorre, Guillaume Bastiat, Elodie Marie dit Chatel and Jean-Pierre Benoit on pages 121–128 of this issue.

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