Imaging of renal carcinoma xenografts with ^{64}Cu-labelled anti-L1-CAM antibody chCE7

Ilse Novak-Hofer, Michael Honer, Simon Ametamey, Jürgen Grünberg, John Missimer, Kurt Zimmermann, P. August Schubiger

Center for Radiopharmaceutical Sciences ETH-PSI-USZ, Paul Scherrer Institute, Villigen, Switzerland

Published online: 22 May 2003

Eur J Nucl Med Mol Imaging (2003) 30:1066
DOI 10.1007/s00259-003-1222-1

High-resolution PET imaging, with the dedicated small animal PET tomograph quad-HIDAC (Oxford Positron Systems, UK), of Caki-2 renal cell carcinoma xenografts with ^{64}Cu-CPTA-labelled mAb chCE7. A nude mouse (26 g) with Caki-2 renal cell carcinoma tumours on the right and left sides was injected with 21 MBq (27 μg) ^{64}Cu-CPTA-chCE7 and data were acquired for 70 min at 26.5 h post injection. The reconstructed images represent a series of coronal slices (0.3 mm thickness) from ventral (*1*) to dorsal (*12*) (*T*, tumour; *L*, lymph node). Strong uptake is observed in two subcutaneous tumour xenografts on the back of the mouse (Table 1, and *T* in coronal sections 7–12). Lower levels of activity are also demonstrated in other organs: the liver and the spleen (sections 1–6), as well as lymph nodes (submandibular and parotid lymph nodes: sections 1 and 2; suprascapular and supraclavicular lymph nodes: sections 3–5; and deep inguinal lymph nodes: sections 6–8). The renal cell tumours do not metastasise, and as the chCE7 antibody does not react with mouse L1-CAM, the accumulation is not due to specific target cell binding. Accumulation of radioactivity in the lymph nodes is higher than in the liver and spleen and is likely to be due to radiocopper labelled metabolites accumulating in cells of the reticuloendothelial system present in lymph nodes.

P. August Schubiger (✉)
Center for Radiopharmaceutical Sciences ETH-PSI-USZ,
Paul Scherrer Institute, 5232 Villigen, Switzerland
e-mail: august.schubiger@psi.ch
Tel.: +41-56-3102813, Fax: +41-56-3102849

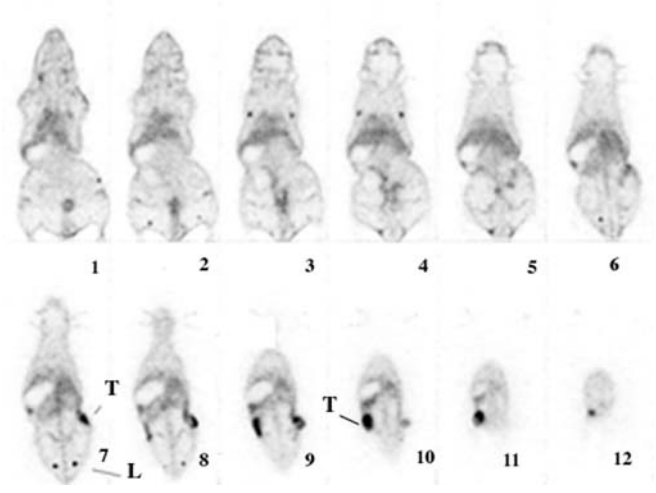

Table 1. Uptake of ^{67}Cu-CPTA-labelled mAb chCE7 (185 kBq/5 μg) in Caki-2 renal carcinoma xenografts and normal tissues 24 h post injection in groups of three cd/nu mice. Data are represented as % injected dose/g of mouse weight (%ID/g)±1SD

Tissue	% ID/g 24 h p.i.
Blood	9.7±5.0
Heart	5.2±1.8
Spleen	9.3±3.3
Kidney	5.0±0.9
Stomach	0.6±0.2
Intestine	1.9±0.4
Liver	7.2±0.8
Muscle	2.3±0.5
Tumour	18.8±4.3