Vascular endothelial growth factor antibody conjugated dextran-coated iron oxide nanoparticles for *in vivo* tumor targeting and imaging

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Vascular endothelial growth factor (VEGF) is a critical component in many cancer types, which provides an opportunity for designing antibody-targeted approaches for cancer imaging and detection. VEGF targeted nanoparticles (VEGF-NP) are developed by conjugating a VEGF antibody to surface functionalized supermagnetic iron oxide nanoparticles in our previous study. To determine if the systemic delivery of VEGF-NP leads to target specific accumulation, we injected these particles through the jugular vein into the Balb/c mice bearing colon cancer from the VEGF-positive mouse colon cancer cell line, CT 26. Magnetic resonance imaging (MRI) scan showed the significant decrease of significant T*2 signal and T2 relaxation in the VEGF-NP injected-mice but not in nanoparticles (NP) alone-injected mice. Examination of paraffin sections of tumor tissues revealed strong blue reaction obtained from the mice that received VEGF-NP, but low reaction was found in mice with NP alone injection by Prussian blue staining. A lot of VEGF-NP was present in cells and extracellular matrix in tumor tissues than NPinjected mice by transmission electron microscopy. These results demonstrated *in vivo* tumor targeting and efficient accumulation of the VEGF-NP in tumor tissues after systemic delivery of colon cancer model. Therefore, VEGF-NP has the potential to be used as a molecular-targeted tumor imaging agent *in vivo*.

Biography

Yuh-Lien Chen has completed her Ph.D at the age of 29 years from National Taiwan University. She has published numerous refereed scientific articles and is a professor in Institute of Anatomy and Cell Biology, College of Medicine, National Taiwan University, Taiwan