



New Peptide-Mimicking Compounds for Anti-Cancer PET Imaging

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods of synthesizing and using γ -AApeptides that can recognize and bind to the cell adhesion molecule, integrin $\alpha_v\beta_3$, which is overexpressed on newly formed tumor vessels and many types of tumor cells but not on normal vessels and tissues.

Overview

Cancers cause about 15 percent of all human deaths worldwide, are not fully understood and defy efficient therapy. Early detection and treatment can improve survival rates and one promising strategy is noninvasive imaging of tumor growth. Specifically, positron emission tomography (PET) scans can show when and where a solid tumor is forming new blood vessels – a process called angiogenesis. In addition, many cancer cells overexpress integrin $\alpha_v\beta_3$; therefore, PET scans targeting integrin $\alpha_v\beta_3$ can enable the detection of both tumor vessel growth and tumor cell growth.

PET tracers are molecules introduced into a patient to find and bind to cancer targets. Such tracers can carry imaging markers or even cancer-fighting agents. One promising target for PET tracers is a protein involved in the growth and spread of many tumors, including lung, prostate, breast and glioblastoma. This tumor protein, integrin $\alpha_v\beta_3$, adheres to healthy proteins containing the peptide sequence RGD. Several PET tracers have entered clinical study that mimic RGD to attach to integrin $\alpha_v\beta_3$, but are unstable or challenging to use in practice.

More stable and active RGD-mimicking compounds could prove promising new agents for targeted treatment and diagnosis.

The Invention

UW–Madison and USF researchers have developed a new class of RGD mimetic compounds called γ -AApeptides that specifically target tumor integrin $\alpha_v\beta_3$ and resist being degraded. The γ -AApeptide tracers mimic the structural and functional properties of natural peptide-based tracers but with significantly improved stability.

Applications

- PET agents for early cancer diagnosis, treatment and prevention

Key Benefits

- Effective and stable
- Highly resistant to being degraded by enzymes

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For More Information About the Inventors

- [Weibo Cai](#)

Publications

- Yang Y., Niu Y., Hong H., Wu H., Zhang Y., Engle J.W., Barnhart T.E., Cai J. and Cai W. 2012. Radiolabeled γ -AApeptides: A New Class of Tracers for Positron Emission Tomography. Chem. Commun. (Camb). 48, 7850-7852.

Tech Fields

- [Drug Discovery & Development : Other drug discovery & development](#)
- [Materials & Chemicals : Synthesis](#)
- [Medical Imaging : Other diagnostic imaging](#)

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