New tracer for better melanoma image

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The Australian research published this week in the American Chemical Society's *Journal of Medicinal Chemistry* describes a new radiopharmaceutical tracer that promises to give clearer pictures of melanoma and could lead to improved disease treatment.

The paper details the chemistry of this novel melanoma positron emission tomography (PET) radiopharmaceutical tracer which captures a picture of the chemical progress of the disease in the body.

The research was conducted by teams working collaboratively as part of the Cooperative Research Centre for Biomedical Imaging Development (CRCBID) and represents a systematic effort by CRCBID to focus on and facilitate the development of technologies to improve the care of melanoma patients.

CRCBID participant researchers have previously developed iodinated radiochemical compounds that target melanin. This latest development, conducted by participants at the Australian Nuclear Science and Technology Organisation (ANSTO) has resulted in the production of a series of novel [18F]fluoronicotinamide radiotracers, suitable for applications in imaging melanoma, using PET.

"The new compounds that have been developed are readily manufactured, show high radiochemical stability and are taken up intensely by the cells that contain melanin," said Dr Andrew Katsifis from ANSTO.

"As a result, we believe they will be ideal for detecting melanomas using PET scans."

"The JMed Chem publication is a major achievement," said Chief Executive Officer of CRCBID, Dr Gerard Roe.

"The CRC for Biomedical Imaging Development has brought together highly skilled, experienced and innovative research teams. By capturing the key strengths of participants, we have fast-tracked the development of these novel PET radiotracers.

"CRCBID will continue to harness the skills of participant research teams and commercial partners to expedite the clinical evaluation of these novel radiotracers. Our ultimate aim is to introduce a cost effective PET imaging agent for melanoma that will enhance patient care in everyday clinical practice as soon as possible."

According to Associate Professor Grant McArthur, from the Peter MacCallum Cancer Centre, a melanoma patients survival is closely related to tumour thickness and the best outcomes are associated with early surgical intervention.

"However, aggressive surgery can be ineffective if the melanoma has spread too widely for the surgeon to eradicate the growth," he said.

"The clinical difficulty we face day-in day-out is in identifying which patients harbour melanoma cells that are beyond the reach of the surgeons scalpel. Currently, PET with fluorodeoxyglucose (FDG) is the best way to make this distinction, but the new agents developed by CRCBID could greatly improve our ability to offer melanoma patients the treatment that best matches the stage of disease."

Professor Rodney Hicks, from the Peter MacCallum Cancer Centre and

CRCBIDs Radiopharmaceuticals Stream Leader said he was enthusiastic about the new tracer.

"We were very excited when we tested this tracer in a number of animal models of melanoma, using small animal PET imaging. Highly sensitive detection of tumours has been made possible; this tracers chemistry is what is described in the J Med Chem paper."

Skin cancer is the third most common human malignancy, with two to three million new cases estimated across the world each year. Although melanoma accounts for only about 130,000 of these, it is the most dangerous form of skin cancer, and accounts for the majority of deaths. The incidence of melanoma is on the increase around the world and once it has escaped the stage of surgical cure, patients can rarely be saved with chemotherapy and other systemic treatments.

"CRCBIDs new PET melanoma tracers offer exciting prospects for diminishing the human burden of this terrible disease, and I am delighted to see the progress that is being made by CRCBID," said Associate Professor McArthur.

CRCBID is scheduling evaluation of the tracer in clinical trials in 2010, the results of which will inform the viability of the tracer for use in patients.

More information: pubs.acs.org/toc/jmcmar/current

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