



EXPERIENCE. RESEARCH.

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Making MRI contrast agents safer

Most of us have had some experience with the magnetic resonance imaging (MRI) procedure, either personally or through loved ones.

Injections given to patients, called 'contrast agents,' are meant to make internal body structures more visible in MRI scans.

But these contrast agents can have nasty side effects; there's debate on how safe these agents are for human health.

Dr. Melanie Pilkington, Associate Professor in the Department of Chemistry at Brock University, is leading efforts to make contrast agents much safer and more effective for Canadians.

At the moment, all contrast agents currently approved for use in Canada contain the magnetic ion gadolinium. Studies have shown that, in some cases, deposits of gadolinium remain in the brain.

Pilkington and her team are currently developing a new family of MRI contrast agents that would make MRI images sharper, allowing for earlier detection of diseases such as cancer. Dosages of the new agents could also be smaller, making it safer for patients.

The key is to use a molecule known as a macrocycle that tightly encapsulates the gadolinium ion.

This allows the ion to do its job of enhancing images in the MRI scan, but prevents it from becoming free to cause unpleasant side effects or remain in the body.

Got questions?

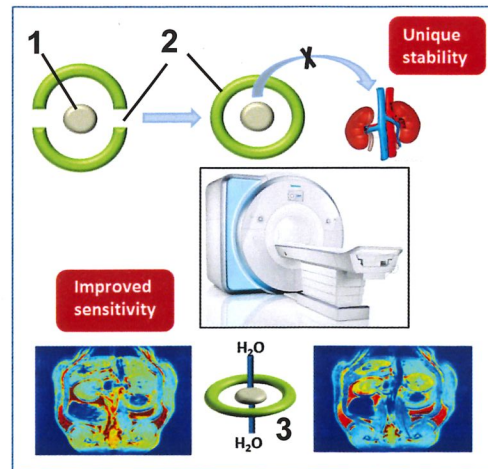
Contact the Pilkinton Group!

<http://www.mpilkington.com/>

mpilkington@brocku.ca
(905) 688-5550 ext. 3403
Fax: (905) 984 4868
Office: CRN 410 (Cairns Building)

How does this work?

1. Gadolinium, which is very toxic, especially to kidneys, can leak into organs and systems.
2. The team formed cyclic bonding molecules, where two halves attach and click together firmly around the gadolinium ion, acting as a shield to protect the body.
3. Current contrast agents contain one water molecule. The team attached two water molecules to the gadolinium ion, greatly enhancing scans. (One water molecule produced the scan on the left; two water molecules for the scan on the right).





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