

New 'chemically-sensitive MRI scan' may bypass some invasive diagnostic tests in next decade

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A new chemical compound which could remove the need for patients to undergo certain invasive diagnostic tests in the future has been created by scientists at Durham University.

Research published in the academic journal, *Chemical Communications*, reveals that this new compound could be used in a 'chemically-sensitive MRI scan' to help identify the extent of progression of diseases such as cancer, without the need for intrusive biopsies.

The researchers, who are part of an Engineering and Physical Sciences Research Council (EPSRC) funded group developing new ways of imaging cancer, have created a chemical which contains fluorine. It could, in theory, be given to the patient by injection before an MRI scan. The fluorine responds differently according to the varying acidity in the body, so that tumours could be highlighted and appear in contrast or 'light up' on the resulting scan.

Professor David Parker of Durham University's Department of Chemistry explained: "There is very little fluorine present naturally in the body so the signal from our compound stands out. When it is introduced in this form it acts differently depending on the acidity levels in a certain area, offering the potential to locate and highlight cancerous tissue."

Professor Parker's team is the first to design a version of a compound containing fluorine which enables measurements to be taken quickly enough and to be read at the right 'frequency' to have the potential to be used with existing MRI scanners, whilst being used at sufficiently low doses to be harmless to the patient.

Professor Parker continued: "We have taken an important first step towards the development of a selective new imaging method. However, we appreciate that there is a lot of work to do to take this laboratory work and put it into practice. In principle, this approach could be of considerable benefit in the diagnosis of diseases such as breast, liver or prostate cancer."

Durham University has filed a patent on this new approach and is looking for commercial partners to help develop the research. Professor Parker and his team believe that molecules containing fluorine could be used in mainstream MRI diagnoses within the next decade.

Chris Hiley, Head of Policy and Research Management at The Prostate Cancer Charity, said: "This is interesting work. The researchers are still some way from testing how this new idea might work in people but they are dealing with a knotty and important problem. In prostate cancer in particular more research is needed into cancer imaging as current techniques need improving.

"This development could have applications in many other cancers too. Once transferred from the lab to the bedside this research has potential to help show exactly where cancer may be in the body. This would add certainty to treatment decisions and improve monitoring of cancer progress. Looking even further into the future it could even have some use in improving diagnosis."

Source: Durham University

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