

Bicarbonate 'could detect cancer'

The naturally-occurring chemical bicarbonate, used to make baking soda, could help detect cancer using sensitive scanning, research suggests.

Bicarbonate is involved in the body's balancing of acid and alkali.

But cancerous tissue is known to turn it into carbon dioxide.

The Cancer Research UK team found MRI scans were able to track changes in the chemical and therefore identify cancers even in the very early stages.

Almost all cancer has a lower pH, meaning it is more acidic than surrounding tissue.

Working with mice, the researchers boosted the MRI sensitivity more than 20,000 times, the Nature journal reported.

'Early warning system'

They said such precision could be used to detect tumours and to find out if cancer treatments are working effectively at an earlier stage.

Currently, there is no way to safely measure differences in pH in patients, but spotting these areas of acidity could be used to find cancers when they are very small.

Lead researcher Professor Kevin Brindle, from Cancer Research UK's Cambridge Research Institute at the University of Cambridge, said: "This technique could be used as a highly-sensitive early warning system for the signs of cancer.

"By exploiting the body's natural pH balancing system, we have found a potentially safe way of measuring pH to see what's going on inside patients.

Treatment response

"MRI can pick up on the abnormal pH levels found in cancer and it is possible that this could be used to pinpoint where the disease is present and when it is responding to treatment."

Using MRI, they looked to see how much of the tagged bicarbonate was converted into carbon dioxide within the tumour. In more acidic tumours, more bicarbonate is converted into carbon dioxide.

Fellow researcher Dr Ferdia Gallagher said: "Although it's early days, if this technique proves to be safe and effective in cancer patients it has the potential to be a crucial tool in detecting cancer earlier - which is often the key to successful treatment."

Dr Lesley Walker, director of cancer information at Cancer Research UK, said: "It's really important that we find new ways of diagnosing cancer earlier and find out if drugs are working well in the body.

"So if clinical trials show that this technique is as safe and effective in cancer patients as we expect, this could be a very useful tool in the early detection of cancer and may save many lives."

Story from BBC NEWS:

<http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/7423304.stm>

Published: 2008/05/28 16:57:26 GMT

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