

New agent may enhance effectiveness of radiotherapy

May 13 2014, by Alison Barbuti

Scientists from The University of Manchester – part of the Manchester Cancer Research Centre - have demonstrated the potential of a drug to improve the effectiveness of radiotherapy in stopping tumour growth.

There is increasing interest in using the body's own immune system to attack [tumour cells](#) – a strategy that can be very effective without the side effects associated with conventional chemotherapy.

Skin cancers have been successfully treated using a topical cream, imiquimod, which recruits [immune cells](#) through a molecule known as toll-like receptor 7 (TLR7), a protein that recognises foreign and potentially harmful material.

Previously, researchers in Manchester have shown that they can also stimulate the immune system into generating an [immune response](#) against non-skin cancers by injecting an agent similar to TLR7 into the blood.

In collaboration with AstraZeneca and Dainippon Sumitomo Pharma, the Manchester group have looked at another molecule that activates TLR7, known as DSR-6434. Using mouse models of two different types of cancer, they investigated DSR-6434 on its own and in combination with [radiotherapy](#) and measured the effect on the primary tumour and the number of secondary tumours in the lungs.

Professor Ian Stratford, from Manchester Pharmacy School who, with

Professor Tim Illidge, led the research published in the *International Journal of Cancer*, said: "We have already seen a strong [immune system response](#) from other immunotherapy agents in combination with radiation – this new agent appears to be even more potent."

His team showed that administering DSR-6434 together with radiotherapy led to tumour shrinkage and increased long-term survival. They found that the combination treatment also reduced the occurrence of secondary lung tumours.

"It looks like there's good reason to use radiotherapy alongside immunotherapy agents in the treatment of solid tumours. These results strongly suggest that this sort of combination therapy should be evaluated in clinical trials with cancer patients," added Professor Stratford.

More information: "A novel systemically administered toll-like receptor 7 agonist potentiates the effect of ionizing radiation in murine solid tumor models." Adlard AL, et al. *Int J Cancer*. 2014 Jan 4. [DOI: 10.1002/ijc.28711](#). [Epub ahead of print]

Provided by University of Manchester

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