Molecular breakthrough could halt the spread of prostate cancer

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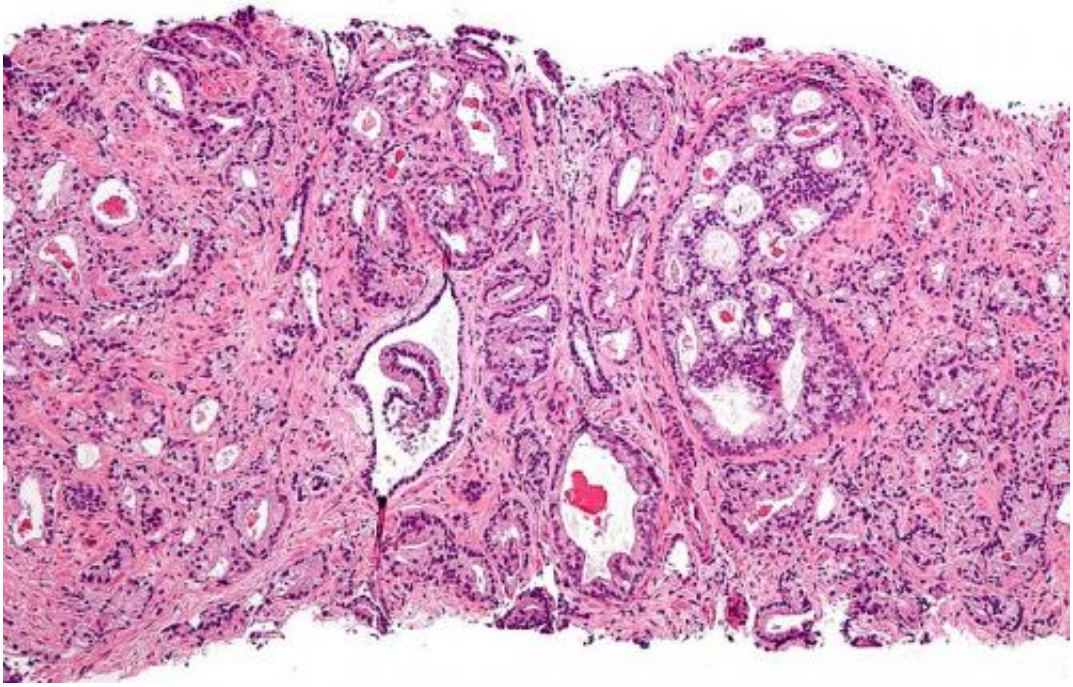

Micrograph showing prostatic acinar adenocarcinoma (the most common form of prostate cancer) Credit: Wikipedia, CC BY-SA 3.0

Scientists believe a new treatment, shown to be effective in mice, could halt the growth of tumours in patients with prostate cancer.

Pioneering research, by academics at the Universities of Bristol, Nottingham and the University of the West of England (UWE Bristol), shows that a specific compound can inhibit the activity of a molecule

which is key to how tumours form new blood vessels. The vessels are essential for the cancer cells to survive and multiply.

The findings, published today in the journal *Oncogene*, show that targeting a molecule called SRPK1 could stop progression of prostate cancer.

SRPK1 plays a vital role in 'angiogenesis' - an essential process through which tumours are able to form blood vessels and obtain necessary nutrients to fuel their growth.

This process is mainly regulated by VEGF - vascular endothelial growth factor - which can activate or inhibit vessel formation depending on how the gene is controlled by a cellular process called 'alternative splicing'.

By analysing samples of human prostate cancer, researchers observed that SRPK1 increases as the cancer gets more aggressive.

Dr Sebastian Oltean, the study's co-author from the University of Bristol's School of Physiology and Pharmacology, said: "We reasoned that inhibition of SRPK1 activity could stop cancer progression. Indeed, we show in this paper that if we decrease SRPK1 levels in prostate cancer cells, or in tumours grafted into mice, we are able to switch VEGF splicing and therefore inhibit tumour vasculature and growth."

Researchers showed that drugs known as SPHINX compounds, designed to inhibit specifically the activity of SRPK1, are able to decrease tumour growth in a mouse model of prostate cancer when given three times weekly by injections.

Professor David Bates, co-author from the University of Nottingham's Division of Cancer and Stem Cells, said: "Our results point to a novel way of treating prostate cancer patients and may have wider implications

to be used in several types of cancers."

Biotech company Exonate, a spin-out drug development company from the University of Nottingham, aims to develop SRPK1 inhibitors as treatments for diseases with abnormal vessel development such age-related macular degeneration and cancer.

This study has been funded by Prostate Cancer UK, the Biotechnology and Biological Sciences Research Council (BBSRC) and Richard Bright VEGF Research Trust.

Dr Matthew Hobbs, Deputy Director of Research at Prostate Cancer UK, said: "There's no denying that there are too few treatment options for the 40,000 men that face a diagnosis of prostate cancer every year in the UK - especially for those with advanced disease. Prostate cancer continues to kill over 10,000 men annually and there is an urgent need for new treatments if we are to significantly reduce this figure.

"Although it's early days, each finding like this represents a crucial block in building up our understanding of what can slow down and stop the progression of prostate cancer. This understanding will give us the foundations needed to develop new targeted treatments for those men in desperate need."

More information: 'Serine arginine protein kinase-1 (SRPK1) inhibition as a potential novel targeted therapeutic strategy in prostate cancer' by Athina Mavrou, Karen Brakspear, Maryam Hamdollah-Zadeh, Gopinath Damodaran, Roya Babaei-Jadidi, Jon Oxley, David A Gillatt, Michael R Ladomery, Steven J Harper, David O Bates and Sebastian Oltean in *Oncogene*.

Provided by University of Bristol