

Using nitroglycerin to treat prostate cancer shows potential to halt disease

February 9 2010

Treatment of prostate cancer using a very low dose of nitroglycerin may slow and even halt the progression of the disease without the severe side effects of current treatments, Queen's University researchers have discovered

The findings are the result of the first-ever clinical trial using nitroglycerin to treat [prostate cancer](#).

The 24-month, Phase II study targeted 29 men with increasing levels of prostate-specific antigen (PSA) following prostate surgery or radiation. PSA levels are a key predictor of cancer progression.

"We were very excited to see a significant slowing in the progression of the disease as evidenced by the men's PSA levels, and to see this result in many of the men who completed the study," says Robert Siemens, the leader of the study and a Professor of Urology at Queen's University and urologist at Kingston General Hospital.

The researchers are encouraged by the results, particularly because safe and effective treatments for men with rising PSA levels following surgery or radiation are limited. They note that further testing needs to be done to confirm the results of this very small study.

The men were treated with a low-dose, slow-release nitroglycerin skin patch and their PSA levels monitored. Of the 17 patients who completed the study, all but one showed a stabilization or decrease in the rate of

[cancer progression](#), as measured by their PSA Doubling Time.

Nitroglycerin has been used at significantly higher doses for more than a century to treat [angina](#). This trial was based on a key finding from pre-clinical research carried out at Queen's, which showed that decreases in nitric oxide play an important role in tumor progression and that this progression can be stopped by low-dose nitroglycerin.

Prostate cancer is diagnosed in approximately 235,000 men per year in the United States and 20,700 in Canada. Of patients who have undergone radical [prostatectomy](#) and/or [radiation treatment](#), it is estimated that 30 to 50 percent will experience a recurrence of cancer.

Results of the study, conducted by Queen's University researchers Robert Siemens, Jeremy Heaton, Michael Adams, Jun Kawakami and Charles Graham, appeared in a recent issue of the journal *Urology*.

Research into the use of nitroglycerin and similar compounds for the treatment of cancer by Drs. Adams, Graham and Heaton has resulted in the issue of 10 patents worldwide. PARTEQ Innovations, the technology transfer office of Queen's, has licensed some of this intellectual property to Nometics Inc., a Queen's spinoff company, which is developing products and therapies based on this and related research.

"This peer-reviewed research is our first clear clinical evidence that low-dose nitric oxide therapy offers prostate cancer patients a new non-invasive treatment option," says Robert Bender, CEO of Nometics. "It is our intention to start broader [clinical trials](#) in 2010 to confirm and expand these results."

Provided by Queen's University

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