

Inhibiting prostate cancer without disturbing regular body processes

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A kinase is a type of enzyme the body uses to regulate the functions of the proteins required for cell growth and maintenance, and researchers have discovered that one in particular plays a key role in developing prostate cancer. "It's known as Mnk, and although it appears not to be essential for normal cell maintenance, it's important for cancer growth" said Dr. Luc Furic, a postdoctoral researcher working with Dr. Nahum Sonenberg at McGill University's Goodman Cancer Research Centre and Department of Biochemistry.

This is a very significant finding because the body's chemical processes are highly complex and interrelated, meaning that targeting one cause of cancer often involves affecting the body's normal functions. An important part of cancer research is about trying to find processes that can be inhibited or stopped without causing damages to normal tissue.

The chemical process Mnk uses is known as phosphorylation, and this process activates or inactivates the body's proteins, controlling mechanisms that can cause disease. In this case, Mnk works with a protein known as eIF4E to synthesize proteins in the cell.

Researchers at the Centre hospitalier de l'Université de Montréal Research Centre (CRCHUM), Université de Montréal and McGill University engineered mice that were able to block the phosphorylation process of this protein, and discovered that these mice became resistant to <u>prostate cancer</u> growth. "The PTEN gene and its protein act as a tumour suppressor," explained Dr. Fred Saad, researcher at the



CRCHUM and at Université de Montréal's Department of Surgery. "By removing this gene in the mouse prostate, we were able to study eIF4E's effect on cell growth."

The research is directly related to humans, because PTEN is frequently mutated in human prostate cancer. Studies on cancer patients have confirmed eIF4E's involvement.

The task ahead will be to find a specific and selective pharmacological inhibitor of Mnks. Although some inhibitors are used for research purposes, these inhibitors are not highly specific to this kinase.

The research was published in the *Proceedings of the National Academy of Science*.

Provided by McGill University

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