

Growth hormone could promote cancer, according to new research

September 21 2007

Growth hormone and associated proteins could be responsible for promoting many types of cancer, including breast and prostate cancer, according to an Australian researcher.

Professor Mike Waters, from the Institute for Molecular Bioscience at The University of Queensland, said that blocking growth hormone action could be a useful avenue for cancer therapy.

He made the comments in a review published in the current issue of American scientific journal *Endocrinology*. His review found that many studies have reported a link between growth hormone and cancer, and a recent analysis found that people lacking growth hormone function are resistant to malignancies.

“There is also evidence that blocking growth hormone action can reduce both size and number of tumours,” Professor Waters said.

The review backed up Professor Waters' own research, published in August in the journal *Proceedings of the National Academy of Sciences USA*, which found growth hormone receptor could induce tumour growth when sent to the cell nucleus.

Growth hormone receptor is the protein that cells use to sense growth hormone, which determines the extent of growth after birth, and regulates metabolism.

Growth hormone receptor works from the surface of the cell, but can also be found in places within the cell, including the nucleus.

“Nuclear-localised growth hormone receptor has been reported in a number of cancers previously,” Professor Waters said. “But no one had analysed the consequences of this until our study.”

Professor Waters and his team found that nuclear localisation of growth hormone receptor is definitely associated with increased cell proliferation and spreading of malignant cells, leading to cancer.

“Cells need to multiply in order for us to grow, and it is growth hormone that triggers this proliferation,” Professor Waters said. “But if the cells multiply too quickly and aggressively, it can be dangerous for the body, and result in disorders such as cancer, so we have an in-built brake that stops the cells from proliferating too much.”

“When we sent growth hormone receptor into the nucleus of cells in mice, we found that this brake stopped working, the cells multiplied at a greater rate and tumours began to appear.”

Professor Waters said the ability of nuclear-localised growth hormone receptor to trigger tumour formation could have important clinical implications.

“Our findings indicate that nuclear growth hormone receptor could be targeted to treat proliferative disorders such as cancer, and strategies aimed at stopping growth hormone receptor from moving to the nucleus could result in useful cancer therapeutics. More generally, blocking growth hormone action in the adult should reduce the spread of cancer within the body without major side effects.”

Source: University of Queensland

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