

# Researchers find that microRNA molecule inhibits production of insulin

July 10 2007

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The body's ability to produce insulin could be enhanced through targeting a newly discovered molecule, helping to fight diabetes, according to research published today in the *Journal of Biological Chemistry*.

The molecule, described by researchers from Imperial College London

and INSERM U145 and EMI 0363 in France, is a microRNA known as miR124. The researchers found that miR124 inhibits the production of insulin in the pancreas. It does this by controlling how several genes are expressed in the body's beta cells, which secrete insulin.

Insulin is the principal hormone that regulates the uptake of glucose and if the body produces insufficient insulin this can cause diabetes.

The researchers believe that if drugs could be developed to suppress the action of miR124, and related microRNAs, in those with diabetes, this could enable more insulin to be produced, helping to combat the condition.

DNA encodes proteins via an intermediate messenger known as RNA, which is then 'translated' to create different proteins. MicroRNAs bind to and inhibit the translation of selected messenger RNAs. They block the synthesis of the encoded proteins and this interferes with processes carried out by cells.

Synthetic molecules known as antagomirs can inactivate microRNAs and scientists are hopeful that they might one day be able to harness their properties to switch off selected microRNAs, including miR124. The researchers are also keen to understand whether variations, or "polymorphisms", exist in the gene that encodes miR124, predisposing certain individuals to diabetes.

Professor Guy Rutter , from the Division of Medicine at Imperial College London and one of the authors of the research, said: "Scientists only discovered the importance of microRNAs a few years ago. Discovering that this particular microRNA plays a fundamental role in the control of insulin production is exciting, and may allow us to develop new tools to treat diabetes. Such findings may be useful in the fight against a disease which affects more than 5 % of the population and

whose incidence is growing yearly."

This research was funded by The Wellcome Trust, the Medical Research Council and INSERM.

Source: Imperial College London

Citation: Researchers find that microRNA molecule inhibits production of insulin (2007, July 10) retrieved 24 April 2024 from <https://phys.org/news/2007-07-microrna-molecule-inhibits-production-insulin.html>

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