

Some light shed on blood sugar production

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A University of Alberta diabetes researcher has collaborated on a body of diabetes research that has unravelled the signalling pathway mystery that controls the production of blood sugar.

Peter Light, Alberta Heritage Foundation for Medical Research senior scholar and associate professor in the U of A Department of Pharmacology, has co-authored an article in the April 10 edition of the prestigious international science magazine, *Nature*. The paper showcases the discovery of a novel signalling pathway between the gut, the brain and the liver, and lowers blood sugar when activated.

In collaboration with University of Toronto diabetes researcher Tony Lam, Light was able to advise on experiments that showed the presence of fat in the small intestine activates a subset of nerves that send a signal to the brain, which in turn instructs the liver to lower blood-sugar production.

"It is almost like a remote-control device which has a direct line to the brain," said Light. "It is like the gut has the brain on speed dial."

Light, whose research focuses on the effects of fats on insulin secretion in the pancreas, says although scientists have known that the brain and liver were involved in lowering blood sugar, this is the first time a direct link has been discovered.

"This means if you can target this pathway in the gut, you may be able to regulate blood-sugar levels, which represents a novel approach to

treating Type 2 diabetes," he said

Scientists around the world are in a race to discover new and effective ways to lower blood-sugar levels in people who are obese or who have diabetes because of the resulting risk of severe complications from high blood sugar, including heart attack, stroke, blindness, erectile dysfunction, foot problems and amputations.

"The next set of experiments will look to determine what types of fats trigger this mechanism and what types of neurons are involved in this pathway to be able to target them with a variety of drugs," said Light. "Once you've established that signalling pathway, you can start looking at molecular targets for specific drugs.

"The nice thing is, because it is in the gut, it is very amenable for some localized oral treatment."

Light adds that the discovery of this direct neural pathway opens up an avenue to discover the possible causes of Type 2 diabetes.

"Is the whole mechanism dampened in an obese or Type 2 diabetic state?" said Light. "It could well be that if you have a diet high in fats going into the gut, it could just desensitize those neurons and they will not fire off any more."

Source: University of Alberta

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