News
The University of Texas Health Science Center at Dallas
5323 Harry Hines Boulevard Dallas, Texas 75235 [214]688-3404

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CONTACT: Ann Williams
OFFICE: 214/688-3404
HOME: 214/279-9402

*******UTHSCD's Denis McGarry receives Lilly Award for diabetes research.

DALLAS--Dr. Denis McGarry, professor of internal medicine and biochemistry at The University of Texas Health Science Center at Dallas, has been named recipient of the 1978 Lilly Award for outstanding research in diabetes.

The award is presented annually by the American Diabetes Association to an investigator under the age of 40. Dr. McGarry will deliver the Lilly Lecture at the association's annual meeting in Boston June 10, when he will receive the award.

"This is a very high honor for Dr. McGarry. He was chosen from a number of very qualified nominees," said Dr. Dan Foster, professor of internal medicine.

"He is receiving the award because he has largely solved the problem of the mechanism of ketone body production in starvation and in diabetes."

"Initially it was a matter of taking every bottle off the shelf," said Dr. McGarry of his search for the metabolic "brake" on the liver's production of ketones, strong organic acids.

"The question is why during prolonged starvation the body produces ketones at a nice conservative rate (to replace glucose for brain metabolism), but under different circumstances--uncontrolled diabetes--the body produces a pathological level," he said. He emphasized that this severe diabetic ketoacidosis, which is life-threatening, occurs primarily in insulin-dependent, juvenile-onset diabetics.

The control of the blood ketone body concentration is somewhat analogous to the regulation of the blood glucose level. From the work of Dr. Roger Unger, UTHSCD professor of internal medicine and 1964 Lilly Award winner, it was known that abnormal concentrations of two hormones, insulin and glucagon, are involved in diabetes. Diabetics have not only an insulin deficiency, but also a glucagon excess.

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Dr. McGarry proposed that ketoacidosis is produced by action of the same hormones. He said that with insulin deficiency fatty acids are released from fat depots, and with glucagon excess the liver becomes more efficient in producing ketones from the fatty acids. So the question was "How does glucagon turn on the ketogenic machinery of the liver?"

After looking at "every bottle on the shelf"--every metabolic step in the liver's oxidation of fat, Dr. McGarry and his co-workers were unable to find the factor responsible for turning on the production of ketone bodies.

"We just had to sit back for awhile and take a fresh approach," he said. He then decided to look at the opposite metabolic pathway--the liver is active at synthesizing fat in the normal, well-fed state.

"The first committed intermediate in the synthesis of fat from carbohydrate is malonyl-Coenzyme A. And lo and behold! Malonyl-CoA shuts down the production of ketone bodies," said Dr. McGarry. Glucagon appears to reduce the concentration of malonyl-CoA in the liver with the result that ketone body production is accelerated.

"This was a beautiful piece of work that Denis did. Older investigators have been working on this for years. And it was just beautiful. He systematically eliminated all the popular theories," said Dr. Foster.

Born in England, Dr. McGarry received his Ph.D. in biochemistry from University of Manchester in 1965. He took postdoctoral fellowships at University of Liverpool and University College of Wales.

Previous Lilly Award winners from the health science center are Dr. Unger and Dr. Marvin Siperstein, now at the University of California at San Francisco.

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