

Doctors at University of Virginia Health System Search for New Treatments for Diabetic Kidney Disease

CHARLOTTESVILLE, Va., Jan. 3 (AScribe Newswire) -- Kidney disease is a life-threatening complication of diabetes-- a disease marked by high levels of glucose in the blood because of defects in the way the body makes or uses insulin. For instance, in 2002, nearly 154,000 diabetic patients reached end-stage renal disease (ESRD) and were living on chronic dialysis or with a kidney transplant, according to the American Diabetes Association. That's more people than live in the entire city of Hampton, Va. Currently, the number of people in the United States with ESRD is about 300,000. That population is expected to double by 2010. The challenge for patients, their families, researchers, nurses and physicians is stopping the progression of kidney disease in its tracks in people with diabetes, potentially saving thousands of lives.

Research on one promising new treatment uses a growing body of evidence that inflammation may be a key cause of diabetic kidney disease. Generally, inflammation is a nonspecific immune response to a type of bodily injury. Working with that idea, Dr. Mark Okusa, a nephrologist and professor of medicine at the University of Virginia Health System, has won two grants totaling \$1.2 million over four years to test whether certain drugs can interrupt the inflammatory process that occurs in diabetic kidney disease. These drugs act on receptors for the compound adenosine. One drug, called ATL-146e, is licensed to the company Adenosine Therapeutics LLC of Charlottesville, Va. Preliminary results show that this drug prevents inflammation associated with acute kidney injury.

"We've been working with drugs affecting the adenosine system in acute kidney injury since the mid-1990's," Okusa said. "Why not take these concepts and apply them to treat chronic kidney disease?" Key members of the Okusa lab at UVA, including Dr. Alaa Awad and Mrs. Liping Huang, have found that adenosine drugs can prevent some of the most serious symptoms of diabetic kidney disease.

"In our laboratory research, these compounds have already shown marked decrease in inflammation," Okusa said, "including a decrease in urinary protein loss, a decrease in kidney scarring and an improvement in kidney function. The real excitement is that these new studies represent a novel approach to combat the most common cause of chronic kidney disease and could rapidly translate into human clinical trials."

Over the last seven years, Okusa's lab, in collaboration with Dr. Joel Linden in UVA's Department of Medicine and Timothy McDonald in UVA's Department of Chemistry, has worked on the therapeutic potential of drugs (agonists) that mimic the function of adenosine 2A receptors to block inflammation. These receptors are expressed on many different cell types and are ideally positioned to interrupt the inflammation that occurs in diabetes, Okusa said.

Okusa's grants are from the National Institutes of Health and the Juvenile Diabetes Research Foundation.