School of Medicine

"Google" Search Garners New Discovery in Polycystic Kidney Disease

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KANSAS CITY, Kan. – An internationally renowned researcher in the study of polycystic kidney disease (PKD) is presenting some groundbreaking findings this week at the American Society of Nephrology Meeting in Philadelphia (Nov. 10-12th).

Jared Grantham, MD, University Distinguished Professor at the University of Kansas Medical Center (KUMC), Trey Putnam, PhD, Midwest Research Institute (MRI), and a team of collaborators have identified a bizarre substance in the massively enlarged kidneys of patients with polycystic kidney disease. The researchers have known for years that the kidneys accumulated a highly potent fatty-like substance with the capacity to stimulate growth. Enlarged polycystic kidneys eventually lead to end-stage renal disease.

Grantham and his team have been attempting to identify the fatty-like chemical in the cysts for more than 12 years. With grant support from the KUMC/MRI Collaborative Research Awards program, they finally assigned a molecular weight to the lipid and created a molecular formula, C22H3407. But they still didn't know what it was.

So just for fun, Grantham plugged the formula into a Google search on his computer.

"Voila! Up popped a picture of a plant, Coleus forskolii," Grantham said. "We learned that the chemical in the enlarged cysts of PKD patients is forskolin – the same as the chemically-active ingredient in the roots of this herb grown in India."

Forskolin is now a popular health food supplement used to treat thyroid conditions, lower cholesterol and reduce blood pressure.

"It was a surprising discovery," Grantham added. But how did it get into these patients? They weren't taking any of the commercial preparations containing forskolin. We're almost certain that the cells in the cysts make the forskolin in much the same way that the chemical substance is made in the plant.

"This is a remarkable discovery for several reasons," Grantham said. "We have discovered a substance that is a potential wrecker of polycystic kidneys, contributing to the uncontrollable growth of multiple cysts within human kidneys. This new knowledge will help us better understand the process of cyst growth and hopefully lead to treatments, therapies and preventions."

"We also learned that patients with PKD should not take any supplement or product that contains forskolin because it may aggravate their condition."

"And, it took this special disease, PKD, and a Google search to discover this substance that is created in both plants and the human body, which is the case for a few other chemical substances."

"This is what we mean by 'discovery research.' It's discovering something entirely new. It's like being an explorer and discovering a whole new mountain range."

PKD is the most common of all life-threatening genetic diseases, affecting 600,000 Americans and an estimated 12.5 million people worldwide. It is more common than cystic fibrosis, muscular dystrophy, and sickle cell anemia combined. There is no known cure or treatment for PKD.

Grantham is a pioneer in the PKD research movement, which began on the KUMC campus in the late 1970s and now involves hundreds of scientists worldwide. He is the former director of the Kidney Institute and founder of the PKD Foundation, which annually provides nearly $3 million in research funding throughout the United States. In 2003, Grantham received the Lillian Jean Kaplan International Prize for Advancement in the Understanding of Polycystic Kidney Disease.

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