

Component of citrus fruits found to block the formation of kidney cysts

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A new study published today in *British Journal of Pharmacology* has identified that a component of grapefruit and other citrus fruits, naringenin, successfully blocks the formation of kidney cysts.

Known as [polycystic kidney disease](#), this is an inherited disorder which leads to the loss of [kidney function](#), [high blood pressure](#) and the need for dialysis. Few treatment options are currently available.

The team of scientists from Royal Holloway University, St George's, University of London and Kingston University London used a simple, single-celled amoeba to identify that naringenin regulates the PKD2 protein responsible for polycystic [kidney disease](#) and as a result, blocks formation of cysts.

"This discovery provides an important step forward in understanding how polycystic kidney disease may be controlled," said Professor Robin Williams from the School of Biological Sciences at Royal Holloway.

"In the study, we have demonstrated how effective the amoeba *Dictyostelium* is in the discovery of new treatments and their targets. Having previously applied the same method of testing in our work into epilepsy and bipolar treatments, it is clear that this new approach could help us reduce reliance on animal testing and provide major improvements."

To test how this discovery could apply in treatments, the team used a

mammalian kidney cell-line, and triggered the formation of cysts in these cells. They were then able to block the formation of the cysts by adding naringenin and saw that when levels of the PKD2 protein were reduced in the [kidney cells](#), so was the block in cyst formation, confirming that the effect was connected.

Dr Mark Carew, from the School of Pharmacy and Chemistry at Kingston University, said: "Further investigation is underway to understand the action of naringenin at the molecular level. This work will entail looking at the function of the PKD2 protein as a cell growth regulator."

"Indeed, this study provides a good example of how chemicals identified in plants can help us develop new drugs for the treatment of disease," added Professor Debbie Baines from St George's, University of London.

"Autosomal dominant polycystic kidney disease affects between 1 in 10 people on dialysis and 1 in 8 with a [kidney transplant](#). Kidney Research UK welcomes this publication that may provide hope for a future new treatment for polycystic kidney disease, alongside its own on-going research focusing on tackling this common genetic kidney disease," said Elaine Davies, Head of Research Operations at Kidney Research UK.

Provided by Royal Holloway, University of London

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