Dr Natasha Rogers

CASE STUDY

SPICE OF LIFE FOR TRANSPLANT PATIENTS

In 2010, PhD student Dr Natasha Rogers was awarded three prestigious awards for her work to improve organ transplant success rates.

Natasha won the Ross Wishart Memorial Award for the best young medical researcher in South Australia and the President's Prize for the Best Research Presentation at the annual meeting of the Transplantation Society of Australia and New Zealand, as well as being the national winner of the AusBiotech-GSK Student Excellence Award.

The transplantation immunology researcher and her Queen Elizabeth Hospital colleagues are trialing an extract from the spice turmeric to counter damage caused by organ rejection. The turmeric extract, called curcumin, has both antioxidant and anti-inflammatory properties which limit the damage caused by an interruption to blood flow.

"The current problem with transplants is that when an organ, such as the kidney, is taken from an organ donor, the blood flow is stopped," Natasha said. "Once transplanted into a patient, blood starts flowing through it again and this blood flow can cause further damage."

This is called ischaemia-reperfusion injury, where the sudden return of blood flow, and the immune cells and oxygen that come with it, actually damage the newly transplanted organ.

"This is a significant problem in transplantation and affects the function of a transplant so that people might have more complications, such as rejection," Natasha said.

However, curcumin is not well absorbed by the body when swallowed and Natasha is establishing a new technique to deliver curcumin throughout the body, using microscopic fat particles called liposomes.

They found that curcumin contained within liposomes was taken up by immune cells in the body, successfully limiting the damage caused by an interruption to blood flow.

"We certainly hope that it could be used in humans in the future, but not just for transplantation. Curcumin could potentially be applied to treat other causes of ischaemia-reperfusion injury, such as heart attacks and strokes," Dr Rogers said. "Curcumin in this form is a safe treatment with no known side effects."

The next step will be trialling the curcumin liposomes in a mouse model of transplantation to see if it can reduce transplant organ rejection and improve transplant survival.

Dr Natasha Rogers completed her PhD in transplantation immunology under the supervision of Dr Toby Coates.