

Childhood coeliac disease discovery opens door for potential treatments

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Coeliac disease researchers Dr Jason Tye-Din and Dr Melinda Hardy from the Walter and Eliza Hall Institute of Medical Research have found that children with coeliac disease react against the same key toxic proteins in gluten that cause the disease in adults. The findings suggest new treatments and diagnostic tests in development for adults with coeliac disease will also be applicable for children with the condition. Credit: Walter and Eliza Hall Institute of Medical Research

A new study has revealed childhood coeliac disease mirrors the condition in adults, increasing the possibility a coeliac disease therapy that could enable patients to eat gluten again will work in children.

A team led by Australian researchers found that children with coeliac disease were reacting against the same key toxic proteins in [gluten](#) that cause the disease in adults. The findings overturn the previously held theory that coeliac disease differs between children and adults, and suggest new treatments and diagnostic tests in development for adults with coeliac disease will also be applicable for children with the condition.

The potential new coeliac disease treatment is an

immunotherapy that aims to teach the immune system to tolerate gluten, which would allow patients to reintroduce gluten to their diets.

The Nexvax2 treatment, being developed by US biotechnology company ImmusanT Inc. and based on research from the Walter and Eliza Hall Institute, will soon enter phase 2 clinical trials for people with coeliac disease.

Clinician-scientist Dr Jason Tye-Din from the Walter and Eliza Hall Institute of Medical Research and The Royal Melbourne Hospital in Melbourne, Australia, led the study, with colleagues at the institute, The Royal Children's Hospital and internationally. The research is published in the current issue of the journal *Gastroenterology*.

Dr Tye-Din said more than 40 children aged between three and 18 years of age were tested to see how their immune system reacted when gluten was reintroduced into their diet.

"We asked the children to eat wheat bread for three days, and then studied the immune response that appeared in their bloodstream." Dr Tye-Din said.

"Contrary to the prevailing theory, and to our surprise, we found that children reacted to the same key peptides of gluten that we had previously identified as toxic in adults with coeliac disease. This is an important finding that has major implications for the relevance of new diagnostic tests and treatments under development for people with coeliac disease."

Coeliac disease is the most common autoimmune disorder and is caused by an inappropriate immune response to gluten, a protein found in wheat, barley, rye and oats. It affects 1 in 70 Australians, causing digestive symptoms such as bloating, abdominal pain and diarrhoea, as well as fatigue, anaemia, and even an increased risk of cancer. The only treatment for coeliac disease is a lifelong

gluten-free diet.

Earlier studies indicated that children with coeliac disease might have a different immune reaction to adults with the condition. "In contrast to earlier studies, this is the first time coeliac disease in children has been studied this way and to this level of detail," Dr Tye-Din said.

"There is a real need for better diagnosis and treatment of coeliac disease for all ages. Our findings are exciting as they support the view that new treatments and tests under development for adults with coeliac disease are likely to apply to children."

ImmusanT chief executive officer Ms Leslie J Williams said the findings indicate the [immune response](#) to gluten is identical in approximately 90 percent of people diagnosed with coeliac disease worldwide, no matter their age. "This is very impactful as we use ImmusanT's targeted immunotherapy discovery platform to advance the development of diagnostic, therapeutic, and preventive strategies that focus on restoring tolerance to gluten in both adults and children," she said.

Mr Tom McLeod, President of Coeliac Australia, said a diagnosis of coeliac disease could be particularly challenging for children and their families. "Coeliac [disease](#) can have a profound impact on not just a person's health but also their social functioning," he said. "This study gives us hope that new treatments under development for [adults](#) with [coeliac disease](#) will also benefit [children](#)."

Provided by Walter and Eliza Hall Institute

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