New test could simplify the diagnosis of coeliac disease

January 13 2014

This shows Dr. Jason Tye-Din, Ms. Cathy Pizzey, Mr. Adam Girardin, and Dr. Melinda Hardy (left to right) from the Walter and Eliza Hall Institute are developing a new blood test to diagnose coeliac disease. Credit: Walter and Eliza Hall Institute

A new blood test being developed by Walter and Eliza Hall Institute researchers can rapidly and accurately diagnose coeliac disease without the need for prolonged gluten exposure.

Dr Jason Tye-Din, gastroenterologist and head of coeliac research at the Walter and Eliza Hall Institute, said the new diagnostic test gave a result within 24 hours and preliminary findings indicated it could accurately detect coeliac disease. It is hoped that larger studies will verify its role as

a widely used tool for diagnosing coeliac disease.

"Current diagnosis of coeliac disease is limited by the need for intestinal biopsies and patients to be eating gluten," Dr Tye-Din said. "For the many people who follow gluten-free diets without a formal diagnosis, reliable testing for coeliac disease requires them to consume gluten again, which is often unpleasant and difficult."

Researchers from the Melbourne institute, with colleagues from biotechnology company ImmusanT in Boston, US, led a study of the blood test in 48 participants, the results of which were published in the journal *Clinical & Experimental Immunology*.

"Our findings reveal this novel blood test is accurate after only three days of gluten consumption, not the several weeks or months traditionally required to make a diagnosis using intestinal biopsies," Dr Tye-Din said.

Coeliac disease is caused by an abnormal immune (T cell) reaction to gluten in the diet, leading to damage to the small intestine. It can cause digestive symptoms such as nausea, vomiting, bloating, and diarrhoea, as well as lethargy, anaemia, headaches and weight loss. As many as one in 60 women and one in 80 men in Australia have coeliac disease, but four out of five remain undiagnosed.

Dr Tye-Din said that the blood test built on fundamental research discoveries the team had made about coeliac disease. "This 'cytokine release' test measures the T cell response to gluten after three days of consumption, and a positive response is highly predictive of coeliac disease," he said. "With this test, we were able to detect a T cell response in the majority of study participants known to have coeliac disease and importantly, the test was negative in all of the patients who did not have coeliac disease, even though they followed a gluten-free diet and thought

gluten was the cause of their symptoms."

Dr Tye-Din said that many 'gluten sensitive' people found it distressing to reintroduce gluten into their diet in order to be tested properly for coeliac disease. "People are fearful about experiencing unpleasant symptoms and end up stopping prematurely or avoiding testing altogether," he said.

"A test that simplifies diagnosis for patients is likely to significantly enhance disease detection. This new diagnostic approach is encouraging and we hope that larger studies can validate these findings and establish its role in the diagnosis of coeliac disease, with the possibility of avoiding intestinal biopsies for diagnosis altogether."

Dr Bob Anderson, chief scientific officer at ImmusanT, said that the blood test could also assist in the monitoring of a therapeutic vaccine for coeliac disease. "This is an important step toward a tool that could monitor changes in the small population of circulating T cells responsible for coeliac disease when using treatments intended to restore tolerance to gluten, such as Nexvax2®, the compound currently being developed by ImmusanT," Dr Anderson said.

Dr Tye-Din said it was important for people following a gluten-free diet to be properly tested for coeliac disease. "Coeliac disease can lead to significant long-term complications such as malnutrition, osteoporosis, infertility, pregnancy issues, liver failure, infection and cancer, so it is essential that people with this illness are diagnosed and treated to reduce these complications," he said.

Provided by Walter and Eliza Hall Institute