



New low-gliadin wheat acceptable to people with gluten sensitivity and also shows potential beneficial effects on the gut microbiome, compared with a gluten-free diet.

Aiming for a wheat that is safe for people with coeliac disease and other gluten-sensitive individuals to consume, Professor Francisco Barro and colleagues of the CSIC Institute for Sustainable Agriculture in Cordoba, Spain have developed transgenic wheat lines in which the gliadin proteins (the gluten elements responsible for the damaging immune response of people with coeliac disease) have been strongly, and specifically, suppressed.¹

Now, a study published in December 2018 in the journal *Nutrients*² has shown that fresh bread, made from the new wheat line, causes no negative response in non-coeliac gluten sensitive (NCGS) individuals when consumed regularly over several days. The bread was considered highly palatable by the trial participants. Moreover, in addition to the success in not triggering any acute gut symptoms, analysis of gut microbial populations demonstrated that the low-gliadin bread caused clear changes in the microbial profile consistent with a more beneficial population of natural bacteria, when compared to the profile present whilst consuming a gluten-free diet.

The full article can be read for free here: <https://www.mdpi.com/2072-6643/10/12/1964>

The new wheat lines are being developed as an alternative option for people with gluten sensitivity by commercial partners of Plant Bioscience Limited, a UK-based technology transfer company, who have also patented the new wheat lines on behalf of CSIC.

Prof. Barro said “This wheat opens up exciting new perspectives for NCGS patients; it’s like following a gluten-free diet but with the aroma and taste of traditional wheat bread and favouring a much healthier microbiome”

Professor Alastair Forbes, Clinical Professor in Medicine at the University of East Anglia, a leader in gastroenterology clinical research said; “This work is really encouraging news for the gluten sensitivity research community and the patients it serves. With no apparent drawbacks we now have a promising new wheat line in development that is non-toxic and promotes a healthier gut microbiome than the often-unpalatable gluten-free options hitherto available.”

Sarah Sleet, Coeliac UK chief executive said: “This is an exciting development showing real potential to develop a new bread from wheat, that may be suitable for people with coeliac disease. We’re not quite there yet, as this paper shows that bread from LGW is acceptable to people with gluten sensitivity but it has not completed testing in individuals with coeliac disease. We look forward to seeing the results of the ongoing tests in coeliac patients, who currently must follow a lifelong strict gluten-free diet to manage this serious autoimmune condition.”

For enquiries regarding the low-gliadin wheat, please contact Plant Bioscience Limited (www.pbltechnology.com) on telephone +44 (0)1603 45600, or via email info@pbltechnology.com

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Plant Bioscience Ltd (PBL, Norwich, UK) - an independent technology management company specialising in plant, food and microbial science.

CSIC, The Spanish National Research Council, is the largest public institution dedicated to research in Spain. Belonging to the Spanish Ministry of Science, Innovation and Universities through the Secretary of State for Universities, Research, Development and Innovation, its main objective is to develop and promote research that will help bring about scientific and technological progress,

References:

¹ Effective shutdown in the expression of celiac disease-related wheat gliadin T-cell epitopes by RNA interference. Gil-Humanes J, Pistón F, Tollefsen S, Sollid LM, Barro F (2010). PNAS; 107(39): 17023-17028.

² The Dietary Intervention of Transgenic Low-Gliadin Wheat Bread in Patients with Non-Celiac Gluten Sensitivity (NCGS) Showed No Differences with Gluten Free Diet (GFD) but Provides Better Gut Microbiota Profile. Carmen Haro, Myriam Villatoro, Luis Vaquero, Jorge Pastor, María J. Giménez, Carmen V. Ozuna, Susana Sánchez-León, María D. García-Molina, Verónica Segura, Isabel Comino, Carolina Sousa, Santiago Vivas, Blanca B. Landa and Francisco Barro (2018). Nutrients; 10(12), 1964.