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Low-gluten wheat that could be eaten by coeliacs produced by gene editing

'The bottom line is I'm sure people with coeliac disease would love to see a product that behaves like wheat without having the problem gluten in it'

Josh Gabbatiss Science Correspondent | 23 hours ago | □1 comment





Wheat is found in many food products, which makes life difficult for people with coeliac disease Getty

A low-gluten strain of wheat that could benefit people with coeliac disease has been created by a team of scientists in Spain.

They hope their work can be applied to producing products like bread that are low in gluten, a group of proteins normally found in wheat.

Coeliac disease results from the immune system reacting to presence of gluten by damaging the small intestine lining. This can result in symptoms such as bloating, diarrhoea and tiredness.





Gluten-free diets 'not recommended' for people without coeliac disease

As a result, those that suffer from it, are unable to eat anything containing wheat.

The condition affects around 1 per cent of the population.

Primarily, a protein called α -gliadin is the component of gluten that causes an adverse immune reaction.

With this in mind, the research team at the Institute for Sustainable Agriculture in the Spanish city of Cordoba edited the α -gliadin genes in wheat using the CRISPR/Cas9 tool, effectively reducing the amount

of α -gliadin in their wheat.

In one of their wheat strains, the scientists knocked out 35 of the 45 genes that code for α -gliadin in wild wheat.

Using this method, the scientists reduced the immune reactivity of the wheat by 85 per cent.



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"We show that CRISPR/Cas9 technology can be used to precisely and efficiently reduce the amount of α -gliadins in the seed kernel, providing bread and durum wheat lines with reduced immunoreactivity for gluten intolerant consumers," the scientists wrote when they published their findings in the Plant Biotechnology journal.

"This is certainly a technique that's of big interest to people," said Sarah Sleet, chief executive of Coeliac UK. "The bottom line is I'm sure people with coeliac disease would love to see a product that behaves like wheat without having the problem gluten in it."

However, she pointed out that the exact protein component that proves toxic for an individual with coeliac disease varies between individuals, and depends on their genetic predisposition to the disease.

"What we don't know in terms of this work, where they have got rid of the most toxic protein epitopes, does that mean that the product is safe for everybody who has coeliac disease?" she said. "There is still some work to be done around that."

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