

Research finds new link between zonulin and two common inflammatory bowel conditions

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The intriguing story of the recently-discovered protein, zonulin, advances a chapter today as Italian scientists announce the results of their latest research linking zonulin with two common inflammatory bowel conditions. The researchers have discovered that people with non-coeliac gluten sensitivity (NCGS) and irritable bowel syndrome (IBS) have higher than normal blood levels of zonulin, suggesting an important role for the protein in the development of these conditions.

Speaking at the 23rd United European Gastroenterology Week (UEG Week 2015) in Barcelona, Spain, Professor Giovanni Barbara from the University of Bologna said the results may lead to new treatment strategies for these conditions. "We were intrigued to find that [blood levels](#) of zonulin were almost as high in patients with NCGS as in those with [coeliac disease](#)," he said.

Zonulin in autoimmune disease

Zonulin is a type of protein (a haptoglobin) that was discovered in 2000 by a team of researchers at Maryland School of Medicine in the USA. The protein is found within [intestinal cells](#) and it is the only human protein discovered so far that regulates the permeability of the intestine. Zonulin has been called a "tight junction regulator", as it controls the size of the gaps between the intestinal cells and orchestrates the passage of nutrients, water and cells into and out of the gut.

Scientists have found that zonulin is produced and released by triggers including intestinal bacterial infections and gluten, and a link between zonulin and coeliac disease has already been established. In the presence of zonulin, the normally tight junctions between the intestinal cells remain open, creating bowel "leakiness" and initiating an inflammatory cascade that eventually damages the intestinal wall.

"Increased [intestinal permeability](#) has been implicated in a range of autoimmune conditions including coeliac disease, type 1 diabetes, rheumatoid arthritis and multiple sclerosis," explained Prof. Barbara. "Since zonulin is a key regulator of intestinal permeability, it is possible that this [protein](#) provides a common link between all these conditions."

Zonulin in NCGS and IBS

In the latest study, the team from Bologna recruited patients with NCGS (n=27), diarrhoea-predominant IBS (IBS-D) (n=15), coeliac disease (n=15) and healthy volunteers (n=15) and they measured their blood levels of zonulin. The highest zonulin levels were found in the patients with coeliac disease (mean 0.033 ng/mg), followed by those with NCGS (mean 0.030 ng/mg) and IBS-D (mean 0.012 ng/mg). The mean level in the healthy volunteers was only 0.007 ng/mg. In the patients with NCGS, blood levels of zonulin fell significantly when they were eating a gluten-free diet.

"This study has increased our understanding of zonulin and how it might contribute to the development of these common and disabling bowel conditions," said Prof. Barbara. "Hopefully, our work will lead to new diagnostic and therapeutic strategies for patients with these and possibly other autoimmune [conditions](#)."

More information: Barbaro MR, et al. The role of zonulin in non-coeliac gluten sensitivity and irritable bowel syndrome. Abstract presented

at the 23rd United European Gastroenterology Week (UEG Week 2015), Oct. 24-27 2015, Barcelona, Spain. 2. Fasano A. Ann NY Acad Sci 2012;1258:25-33.

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