

# Non-celiac gluten sensitivity

Non-celiac gluten sensitivity is a disease of the gastrointestinal system caused by the body's inability to tolerate gluten.

Non-celiac gluten sensitivity has similar manifestations to celiac disease. The clinical picture includes **gastrointestinal and extraintestinal** problems, same as with celiacs, but there is no atrophy of the small intestinal villi.

## Differential diagnosis

It is necessary to distinguish non-celiac gluten sensitivity from celiac disease or allergy to wheat. Blood samples, serological tests and histological examination of a sample taken during colonoscopy are used for this purpose. If the results are negative, a gluten-free diet is recommended. If the problem subsides during the diet, the diagnosis is confirmed by an exposure test.

## Gastrointestinal manifestations

- Diarrhea / constipation
- Flatulence
- Nausea and abdominal pain
- Aphthous stomatitis
- Heartburn caused by gastroesophageal reflux

Gluten, found in cereals as a storage substance, consists of polymeric and monomeric subunits. The polymeric parts of gluten are called **glutenins**, while the monomeric parts are called **prolamins**.

These gluten subunits are resistant to enzymatic digestion by both gastric and pancreatic peptidases and small intestinal mucosal brush border peptidases.

The amino acid chains of prolamins can penetrate unchanged into the layers of the mucosa of the small intestine (lamina propria and submucosa). They provoke an **excessive reaction of the immune system**, more specifically components of its innate immunity. There is an accumulation of neutrophils and eosinophils in the intestinal mucosa and an increase in the amount of basophils in the bloodstream.

According to some sources, intestinal problems may be caused by **changes in the neuromuscular activity** of the jejunum and ileum. These effects on nerve plexuses in the intestinal wall can lead to:

- Increased intestinal muscle contraction and increased cellular secretion resulting in frequent diarrhea
- Slowing down of the intestinal peristalsis similar to the use of opioids resulting in constipation

**!CAVE!** An increased immune response to the presence of gluten in the diet can also be caused by **intestinal inflammation**, an **imbalance of the intestinal microflora** (gram-negative bacteria predominate over gram-positive ones) or **changes in barrier permeability** of the intestinal epithelium and excessive intake of glutamates and other preservatives.

## Extra-intestinal manifestations

- Skin rash
- Paresthesia - tingling or numbness of the acral parts of the body
- Mental disorders - depression, anxiety, headache
- Generalised fatigue

## Association with psychiatric disorders

There are studies showing a link between non-celiac gluten sensitivity and mental illness. In people suffering from schizophrenia or autism, the incidence of gluten sensitivity is noticeably more pronounced. After the implementation of an adequate diet without the presence of gluten, some symptoms of these mental illnesses may disappear or be alleviated.

Incomplete digestion of gluten (often at the same time as improper digestion of casein) results in the formation of **exorphine**, the release of which into the blood is conditioned by a disruption of the intestinal barrier (= increased permeability of substances). Exorphins subsequently cross the blood-brain barrier and bind to opioid brain receptors.