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Disaccharidase deficiency can cause the symptoms of irritable bowel syndrome

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Background. The decrease in disaccharidase activity of the membrane digestion in the small intestine providing digestion of carbohydrates can cause clinical symptoms of irritable bowel syndrome (IBS).

Aim. The aim of the current study was to estimate the enzymes activity of the membrane digestion of carbohydrates, namely glucoamylase, maltase, sucrase and lactase in patients with IBS and the effect of their activity in long-term therapy with rebamipide.

Methods. 102 patients with IBS, 41 men and 61 women were examined. According to Rome IV criteria (2016), 68 patients had IBS with predominance of diarrhea, 20 patients had IBS with predominant constipation and 14 patients showed mixed type of IBS. The activity of glucoamylase, maltase, sucrose and lactase were determined by Dahlquist-Trinder method in duodenal biopsies obtained during esophagogastroduodenoscopy. The control group consisted of 20 healthy people aged 23-47. They showed following enzyme activity: lactase -42 ±13 ng glucose/mg tissue x min, glucoamylase — 509 ±176, maltase — 1735 ±446, sucrase - 136 ±35 ng glucose/mg tissue x min. These figures were taken as the norm.

Results. 10,8% of the study group showed normal disaccharidase activity of the membrane digestion (11 out of 102 patients), 32.3% had decreased activity of all studied enzymes and 58.8% had selective reduction of disaccharidase activity. Twenty patients with disaccharidase deficiency were recommended the FODMAP diet and ingest rebamipide 3 times a day x 200 mg for 3 months. Before the treatment the activity of glucoamylase 83 ±78, maltase - 417±221, sucrase— 32 ±17, lactase -11 ±17 ng glucose/mg tissue x min. After the treatment 16 patients reported a decreased or no flatulence, abdominal pain, stool disorder; 4 people reported no change. The activity of glucoamylase increased to an average of 149 ±82 (by 78%, p = 0.016), maltase to 864 ±472 (by 131%, p = 0.0019), sucrase - 63 ±35 (by 95%, p = 0.0041) and lactase — 10 ±8 ng glucose/mg tissue x min.(the activity did not change significantly).

Group of patients	Activity of enzymes of the membrane digestion, ng glucose/mg tissue x min			
	Glucoamylase	Maltase	Sucrose	Lactase
Before the treatment	83 ±78	417 ±221	32 ±17	11 ±17
After the treatment	149 ±82	864 ±472	63 ±35	10 ±8

Conclusion. In 89.2% of patients with IBS, there was a decrease of disaccharidase activity in the small intestine providing digestion of carbohydrates. The 3-month treatment with rebamipide helped reduce clinical symptoms of IBS and increase disaccharidase activity of the membrane digestion of carbohydrates in small intestine.

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