

Considering the increase in the incidence of functional abdominal pain in the children's population, it is necessary to seek non-invasive diagnostic methods that can cover the largest possible number of children and provide precise explanations of the impact of dietary modulation on changes in the microbiota as the first stage of therapeutic intervention. The conducted study aimed to evaluate the potential use of diagnostic tests for the gastrointestinal microbiota in children with functional abdominal pain in relation to the applied dietary intervention. The study included a group of 28 children aged 5 to 12 years who met the inclusion criteria. The participants were divided into two groups using randomization: Group I received a diet with FODMAP restriction, while Group II received a diet in accordance with NICE guidelines.

The investigated diagnostic parameters of urine in the children mostly showed elevated levels of d-arabinitol metabolite, exceeding the normal range, in 96% of the study sample before the dietary intervention. This metabolite is a product of the metabolism of several potentially pathogenic *Candida* species, which may serve as a basis for developing a dietary therapy limiting overall carbohydrate intake. After the 4-week FODMAP dietary intervention and the diet based on NICE guidelines, changes in the gut microbiota composition were observed in the analyzed diagnostic parameters of dysbiosis and zonulin levels compared to the pre-intervention state. However, these differences did not achieve statistical significance.

The dietary intervention based on NICE guidelines showed significantly lower concentrations of hydroxyphenylacetic acid metabolite compared to the FODMAP diet group, which may indicate its significance as a potential biomarker or indicator of response to the applied dietary intervention.

The obtained study results, despite not achieving significant differences in the levels of most analyzed diagnostic parameters, suggest that they can be a valuable supplementary tool in the assessment and therapy of children with functional abdominal pain.. However, further clinical studies with a larger population are necessary to verify the analyzed health status markers. Effective diagnosis of the gastrointestinal microbiota may be of significant importance in the treatment and prevention of children with functional abdominal pain.