

Symposium | MDD : [Symposium 53] How does the gut microbiota contribute to elucidating the mental health in children and adolescents?

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## [Symposium 53] How does the gut microbiota contribute to elucidating the mental health in children and adolescents?

Moderator: Katsunaka Mikami (Department of Psychiatry, Tokai University School of Medicine), Chaiyavat Chaiyasut (Innovation Center for Holistic Health, Nutraceuticals, and Cosmeceuticals, Faculty of Pharmacy, Chiang Mai University)

### [SY-53-03] Association Between Gut Microbiota and Eating Disorders

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キーワード : gut microbiota、eating disorder、anorexia nervosa、uremic toxin

Anorexia nervosa (AN) is a psychiatric disorder with one of the highest mortality rates, and effective treatment strategies remain under investigation. Various psychotherapeutic approaches, including cognitive behavioral therapy for eating disorders, have been developed to date. In addition, research utilizing genome-wide association studies (GWAS) and neuroimaging has advanced our understanding of the disorder. Our laboratory is currently exploring the therapeutic potential of gut microbiota modulation.

We hypothesize that patients with AN, who often suffer from nutritional imbalances, exhibit dysbiosis of the gut microbiota, and that the gut microbiota–gut–brain axis may play a role in the pathophysiology of the disorder. In fact, the gut microbiota composition in patients with AN differs significantly from that of healthy controls. To investigate this further, we conducted fecal microbiota transplantation (FMT) experiments using germ-free mice, transplanting fecal samples from either AN patients or healthy individuals. Mice that received microbiota from AN patients showed impaired weight gain and increased anxiety-like behaviors.

To identify potential mediators of host alterations caused by dysbiosis, we conducted serum metabolomic analysis. In AN patients, several uremic toxins—metabolites known to be produced by gut bacteria—were detected at higher concentrations compared to healthy controls. Recent studies from other countries have also reported similar findings, with elevated levels of uremic toxins in AN patients. These toxins may serve as key factors in the gut microbiota–gut–brain axis underlying AN. Although a unified consensus has yet to be established, it is hypothesized that therapeutic strategies aimed at reducing uremic toxins and enhancing short-chain fatty acid production could be beneficial in alleviating the symptoms of AN.

In this presentation, we will review recent developments in gut microbiota research, share data from our laboratory, and discuss the therapeutic potential of microbiota-targeted interventions for eating disorders.