



### Fermented Foods and Microbiota: New Approaches for Mental Health Promotion

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#### Abstract

Fermentation may amplify the specific nutrient or phytonutrient content of foods, the ultimate value of which is associated with mental health; furthermore, the microbes associated with fermented foods may also influence brain health via direct and indirect pathways. This review is intended to guide the development of fermented foods for enhanced human mental health benefits. We searched databases PubMed and Google using “fermented beverages”, “traditional foods”, “lactic acid bacteria”, “microbiota”, “anxiety” and “depression” to identify articles related to fermented foods, intestinal microbiota and mental health. Fermentation induced bacterias as the class of probiotics, are capable of producing and delivering neuroactive substances such as gamma-aminobutyric acid and serotonin, which act on the brain-gut axis. Preclinical evaluation in rodents suggests that certain psychobiotics possess antidepressant or anxiolytic activity. Effects may be mediated via the vagus nerve, spinal cord, or neuroendocrine systems. So far, psychobiotics have been most extensively studied in a liaison psychiatric setting in patients with irritable bowel syndrome, where positive benefits have been reported for a number of organisms including *Bifidobacterium infantis*. Evidence is emerging of benefits in alleviating symptoms of depression and in chronic fatigue syndrome. Such benefits may be related to the anti-inflammatory actions of certain psychobiotics and a capacity to reduce hypothalamic-pituitary-adrenal axis activity. Results from large scale placebo-controlled studies are awaited. Microbes (for example, *Lactobacillus* and *Bifidobacteria* species) associated with fermented foods may influence brain health via direct and indirect pathways.

**Keywords:** Fermented Foods, Microbiota, Mental health, Depression, GABA, Serotonin.

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