

Topic Area: Dietetic Practice and Education

Abstract Title

Psychobiotics and their neural effects on antidepressant and anxiolytic activity via the gut-brain axis
A. Whittemore¹, S. Campbell Bligh²; ¹⁻²Acadia University, Wolfville, NS

Abstract

Introduction: The purpose of this research was to investigate how, if at all, psychobiotics (probiotics with mental health benefits) and their proposed neural effects can be linked to antidepressant and anxiolytic activity via the gut-brain axis.

Objectives: To investigate the suggested mechanisms involved in the relationship between psychobiotics and their proposed beneficial neural effects.

Methods: A literature review was conducted utilizing online databases including the Acadia Library, Science Direct, and Medscape. Personal communication with a dietitian specializing in this area was used to guide and supplement the literature review, as it became apparent early in the process that research from a nutrition perspective was limited. Animal and human studies were included, yielding a total of twenty-one articles reviewed.

Results: Articles reviewed were predominantly neurological/psychological in nature or came from the field of biology. Two studies reviewed stemmed from nutrition. Four studies involved human subjects; seven used animal models. Results suggested that the relationship between psychobiotics and mental health is mediated along the gut-brain axis, utilizing the interoceptive awareness of the vagus nerve (VN). Secondary to psychobiotic administration, this connection appears to induce anxiolytic and antidepressant effects by influencing levels of serotonin, gamma-aminobutyric acid (GABA), and dopamine, neurotransmitters involved in mental stability.

Conclusions: While the link between psychobiotics and antidepressant/anxiolytic effects seems supported in animal studies, more research in human populations is needed before additional conclusions can be drawn. It is also essential to consider how to increase research from a nutrition/dietetic-specific lens.

Significance to the Field of Dietetics: Dietitians work with clients whose nutrition status may be impacted by mental health in a variety of ways. As the understanding of psychobiotics and their possible benefits increases, this could innovate how we approach nutrition therapy for this patient base. This also supports the potential for interdisciplinary research between dietetics, psychiatry, and neuroscience.