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Mood effects of the amino acids tryptophan and tyrosine: 'Food for Thought' III

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Abstract

Objective: Reflecting increased scientific interest in any nutritional contribution to the onset and treatment of mood disorders, we overview research into two neurotransmitter precursors - the amino acids tryptophan and tyrosine - particularly examining whether any deficiency increases risk to depression and whether those amino acids have any antidepressant properties.

Method: The theoretical relevance of the two amino acids was overviewed by considering published risk and intervention studies, technical papers and reviews.

Results: There is some limited evidence, suggesting that depressed patients, especially those with a melancholic depression, have decreased tryptophan levels. Whether such findings reflect a causal contribution or are a consequence of a depressed state remains an open question. There is a small database supporting tryptophan preparations as benefitting depressed mood states. There is no clear evidence as to whether tyrosine deficiency contributes to depression, while the only randomized double-blind study examining tyrosine supplementation did not show antidepressant benefit.

Conclusion: Acute tryptophan depletion continues to provide a research tool for investigating the relevance of serotonin to depression onset. There is limited evidence that tryptophan loading is effective as a treatment for depression through its action of increasing serotonin production. Most clinical studies are dated, involve small sample sizes and/or were not placebo controlled. The development of the new serotonin reuptake inhibitor drugs seemingly signalled an end to pursuing such means of promoting increased serotonin as a treatment for depression. The evidence for tyrosine loading promoting catecholamine production as a possible treatment for depression appears even less promising, and depletion studies less informative.

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