

Review

Effect of tyrosine supplementation on clinical and healthy populations under stress or cognitive demands—A review

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Highlights

- Tyrosine (TYR) can enhance dopamine and norepinephrine in the brain.
- TYR supplementation reverses cognitive decline under stress or cognitive demands.
- Disease characteristics likely determine the efficacy of TYR supplementation.

Abstract

Consuming the amino-acid tyrosine (TYR), the precursor of dopamine (DA) and norepinephrine (NE), may counteract decrements in neurotransmitter function and cognitive performance. However, reports on the effectiveness of TYR supplementation vary considerably, with some studies finding beneficial effects, whereas others do not. Here we

review the available cognitive/behavioral studies on TYR, to elucidate whether and when TYR supplementation can be beneficial for performance. The potential of using TYR supplementation to treat clinical disorders seems limited and its benefits are likely determined by the presence and extent of impaired neurotransmitter function and synthesis. Likewise, the potential of TYR supplementation for enhancing physical exercise seems minimal as well, perhaps because the link between physical exercise and catecholamine function is mediated by many other factors. In contrast, TYR does seem to effectively enhance cognitive performance, particularly in short-term stressful and/or cognitively demanding situations. We conclude that TYR is an effective enhancer of cognition, but only when neurotransmitter function is intact and DA and/or NE is temporarily depleted.

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