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Effect of Green Tea Phytochemicals on Mood and Cognition

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Abstract

Background: Green tea is traditionally known to induce mental clarity, cognitive function, physical activation and relaxation. Recently, a special green tea, matcha tea, is rapidly gaining popularity throughout the world and is frequently referred to as a mood- and brain food. Matcha tea consumption leads to much higher intake of green tea phytochemicals compared to regular green tea. Previous research on tea constituents caffeine, L-theanine, and epigallocatechin gallate (EGCG) repeatedly demonstrated benefits on mood and cognitive performance. These effects were observed when these phytochemicals were consumed separately and in combination.

Methods: A review was conducted on 49 human intervention studies to summarize the research on acute psychoactive effects of caffeine, L-theanine, and EGCG on different dimensions of mood and cognitive performance.

Conclusion: Caffeine was found to mainly improve performance on demanding long-duration cognitive tasks and self-reported alertness, arousal, and vigor. Significant effects already occurred at low doses of 40 mg. L-theanine alone improved self-reported relaxation, tension, and calmness starting at 200 mg. L-theanine and caffeine combined were found to particularly improve performance in attention-switching tasks and alertness, but to a lesser extent than caffeine alone. No conclusive evidence relating to effects induced by EGCG could be given since the amount of intervention studies was limited. These studies provided reliable evidence showing that L-theanine and caffeine have clear beneficial effects on sustained attention, memory, and suppression of distraction. Moreover, L-theanine was found to lead to relaxation by reducing caffeine induced arousal.

Keywords: EGCG; Green tea; L-theanine; caffeine; cognition; mood.

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