

Study Finds Roasted Green Tea Boosts Mental Task Performance

A study published reveals the effects of green tea and roasted [green tea](#) consumption on human responses.



Introduction

Green tea has become a popular beverage worldwide because of its health benefits, including [antioxidant](#), antimicrobial, and cholesterol-lowering effects. Variations in production methods give rise to a variety of green tea, including sencha, roasted green tea, gyokuro, and bancha.

Studies investigating the health benefits of caffeine-rich teas have found that higher consumption of green tea can reduce mortality risk, increase fat oxidation, promote energy expenditure, reduce [blood pressure](#), and reduce the risk of diabetes, colorectal cancer, and gastric cancer development.

Various components present in green tea, including catechins, caffeine, theanine, and vitamins, are responsible for its health benefits. Among these components, theanine has been found to reduce brain atrophy, learning disabilities, stress, and [depression](#). This amino acid has also been found to trigger a relaxation response.

In this study, scientists have investigated the effect of green tea and roasted green tea consumption on [human responses](#) during a mental task.

Study

The study was conducted on a total of 20 men aged 18 to 30 years. The participants were asked to complete the Subjective Fatigue Feeling questionnaire and respond to 18 [psychological stress](#) reaction times of the Brief Job Stress questionnaire. This questionnaire assessed their current stress level.

The participants were next provided with the intervention beverage (green tea or roasted green tea) or placebo beverage (hot water). They were asked to perform a 5-minute mental arithmetic task. Three separate tests were then administered for various subjective assessments related to the mental task, including [mental load](#), flow, and duration judgment.

The procedure from beverage intake to subjective assessment was repeated three times. A total of 11 physiological responses were measured continuously throughout the experiment sessions, including the R-R intervals, heart rate variability spectral components, respiration, brain signals,

oxygen saturation, skin potential level, blood pressure, cardiac output, tissue blood volume and flow, and [hemoglobin/oxyhemoglobin](#) level.

Results

The subjective assessments related to the task performance revealed a significantly higher average problem level in the green tea session than in the [water session](#). However, in the roasted green tea session, significantly higher response rates and correct responses were observed than in the water session.

Overall, a significantly higher task performance was observed in the tea condition than in the water condition across all sessions. Between three [mental task](#) repetitions in the roasted green tea condition, the performance level was better in task 2 and task 3 compared to that in task 1.

Regarding [fatigue level](#), a significant increase was observed after the task in all experimental conditions except in the second half session of the roasted green tea condition. However, no significant differences in the stress level were observed between sessions.

Physiological Responses

In all conditions, the R-R intervals, [heart rate](#) variability components, and fingertip plethysmogram amplitude were reduced during the task periods compared to the resting periods.

A significantly higher blood pressure was observed during the tasks compared to that during rest. A significantly lower tissue [blood volume](#) and flow and hemoglobin/oxyhemoglobin responses was observed in the tea condition compared to the water condition.

Analyzing heart rate variability spectral components revealed significant correlations between [parasympathetic](#) components in the tea condition.

Conclusion

The study finds that intake of roasted green tea can improve performance levels, such as correct response rate, during mental [arithmetic tasks](#). Roasted green tea has also shown anti-fatigue effects during mental tasks.

The study finds that [aromatic stimulation](#) of green tea can induce positive physiological and subjective responses even in small quantities and within a short duration, reflecting responses observed in daily consumption.

Source:

<https://www.news-medical.net/news/20240415/Roasted-green-tea-boosts-mental-task-performance-study-finds.aspx>