

Effects of Blueberry Flavonoids on Mood and Cognition in Young Adults

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Introduction

- Diets rich in fruit and vegetables, possibly due to their high flavonoid content, are associated with lower incidence of mental health difficulties such as depression¹.
- Mood regulation involves a wide range of cognitive processes such as directing attention and thoughts (away from negative stimuli) and initiating and directing behaviours.
- Cognitive disturbances such as impaired concentration, inattention or slowed thinking are common in depression.
- Dietary interventions high in flavonoids (i.e. grapes, tea, cocoa & blueberries) have shown improvements in cognitive functions such as attention and memory in both adults and children^{2,3,4,5}.
- Given the well-documented link between flavonoid consumption and cognition, and cognition and depression, this study explored the effects of acute blueberry flavonoid on cognition and thereby on mood in healthy young adults.

Methods

- Twenty one 18-21 year old students (19 females) were placed on a controlled low flavonoid diet for 24 hours prior to testing.

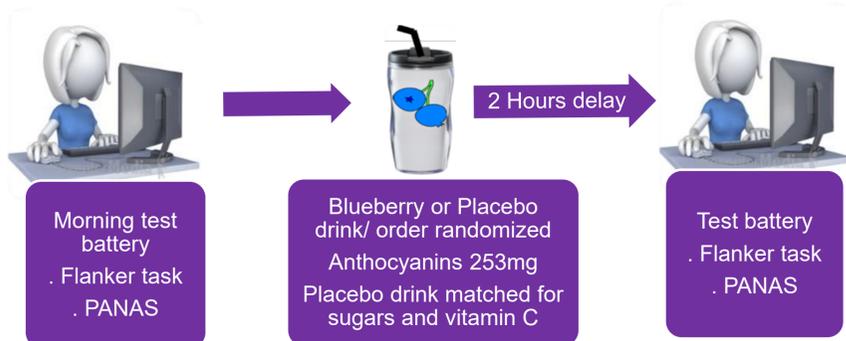


Figure 1: Test day procedure.

- Participants performed the task battery on three separate days with a minimum of 3 day washout period between each session. The first session was considered as a practice session and participants did not receive any intervention. 2nd and 3rd test sessions, participants received either a blueberry drink or matched control drink, the order of which was fully randomised. Both the participant and the researcher was blinded to the condition.

Task	Sample Stimulus
<p>Modified Flanker task:</p> <p>Participants responds to the centre arrow, closes to the cross.</p> <p>Measures: Inhibition response and attention</p>	
<p>Positive and Negative Affect Schedule (PANAS):</p> <p>Participants were asked to rate the degree to which they experienced each of the 20 emotions at the time.</p> <p>Measures: Positive mood and negative mood.</p>	

Table 1: The tasks used and its function.

Results

- Analysis of variance (ANOVA) was carried out to investigate cognitive function, positive and negative mood.
- Consumption of blueberry drinks resulted in increased overall positive mood, specifically in the feelings of excitement and proudness.
- However there was no significant difference between negative mood or cognition (accuracy or reaction time) when blueberry drink or placebo drink was consumed.

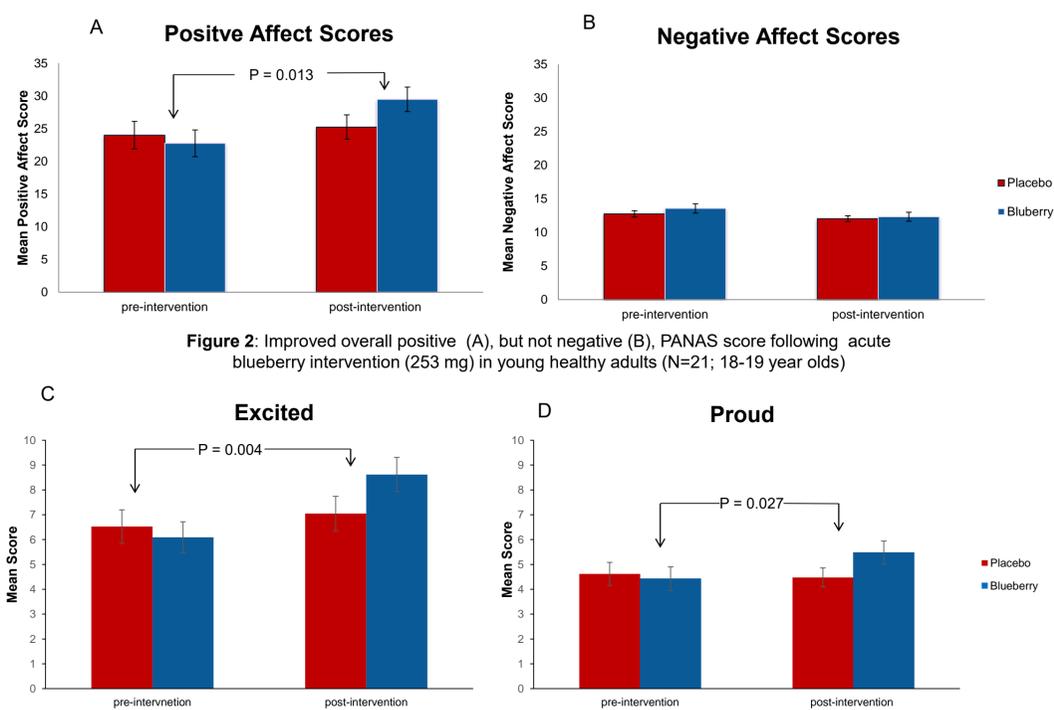


Figure 3: Improved Excited (C), and Proud (D), PANAS score following acute blueberry intervention (253 mg) in young healthy adults (N=21; 18-19 year olds).

Discussion

- Students reported an increase in positive mood two hours after consuming a flavonoid rich blueberry drink.
- This study shows that consumption of flavonoids such as blueberries could boost positive mood and in feelings such as being proud, determined, excited and enthusiastic.
- Previous studies suggests that flavonoid consumption may improve mood – this might due to the direct effect of flavonoids on cognition. However, we observed an effect of blueberry flavonoids on positive mood independent of its effects on cognition.
- Possible mechanism of flavonoids effect on mood: Flavonoids are a family of benzodiazepine receptor ligand and exhibit a range of biological activity including GABAergic transmission which leads to decreased neuronal excitability resulting in calming and anxiolytic effects⁶.

References

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