

# The impact of watermelon juice on blood pressure in young healthy adults: A pilot randomised controlled crossover trial

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Watermelon is distinctively high in L-citrulline, a non-essential amino-acid and precursor of L-arginine *in vivo* <sup>(1)</sup>. L-arginine plays a key role in nitric oxide synthesis in the body; nitric oxide is a well-known vasoactive compound which plays an essential role in blood pressure regulation and cardiovascular disease reduction <sup>(2)</sup>. Therefore, the role of watermelon on cardiovascular health has been gaining interests, specifically with regards to its impact on blood pressure <sup>(2)</sup>. Previous research demonstrates a hypotensive effect with concentrated watermelon extract, containing high doses of L-citrulline (~3–6 g) via nitric oxide induced vasodilatation <sup>(3)</sup>. Studies on dietary watermelon intakes, with lower doses of L-citrulline, show mixed findings. Therefore, our study aimed to investigate the impact of commercial watermelon juice on blood pressure in healthy adults.

In a randomised controlled crossover, single-blinded trial, 10 healthy participants (18–30 years) were randomised to consume 500 mL of either watermelon juice (~1 g citrulline) or low nitrate water (control). 24-hours before each arm, participants followed a low-nitrate, low-polyphenol, and caffeine-free diet. Blood pressure was measured at baseline and at 15-minute intervals after consuming the drink until 2 hours. Blood samples were taken at baseline and at 90 minutes after consuming the drink and pooled urine was collected from 0–2 hours.

Two-way repeated measures ANOVA showed a significant treatment effect on systolic blood pressure ( $p < 0.001$ ) but no treatment\*time interaction ( $p = 0.91$ ). A trend for decreased systolic blood pressure with watermelon juice versus the control was observed over the 2 hours. The maximal reduction from baseline reached after 2 hours of consumption of watermelon juice ( $-5.3 \text{ mmHg} \pm 4.06$ ), was statistically significant in comparison to control, with paired T-test although no adjustment for multiple testing was made ( $p = 0.02$ ,  $\Delta 13.1 \text{ mmHg}$ , 95%CI:  $-24.09$ ;  $-2.11$ ). Two-way repeated ANOVA showed no statistically significant treatment effect on diastolic blood pressure ( $p = 0.10$ ).

Our pilot trial demonstrates potential for watermelon juice to reduce blood pressure. Based on the time of the maximal reduction, this may be attributed to L-citrulline and/or other bioactive compounds within the juice. Analysis of stored blood and urine samples will provide further insight. Future studies are still needed to understand possible underpinning synergistic effect of different bioactives present in watermelon including phenolic compounds and lycopene.

## Acknowledgments

Special thanks to the support provided by the staff at the Hugh Sinclair Unit, department of Food and Nutritional sciences at the University of Reading.

## References

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