

New Zealand blackcurrant benefits resting cardiovascular function in trained cyclists – dose responses

Fruit and vegetable intake is known to promote health benefits. In part, this can be attributable to the polyphenol content. Anthocyanins are a type of polyphenol and are known to promote health benefits, including positive cardiovascular alterations such as an increase in peripheral blood flow. This is potentially from its anti-inflammatory and anti-oxidative actions. Typically, berry fruits are brightly coloured which results from high anthocyanin concentrations causing the colouration. The largest contributing factor to amount of anthocyanins present in berries are the environmental growing conditions. The environmental conditions within New Zealand result in a high anthocyanin content in blackcurrant (*Ribes Nigrum*).

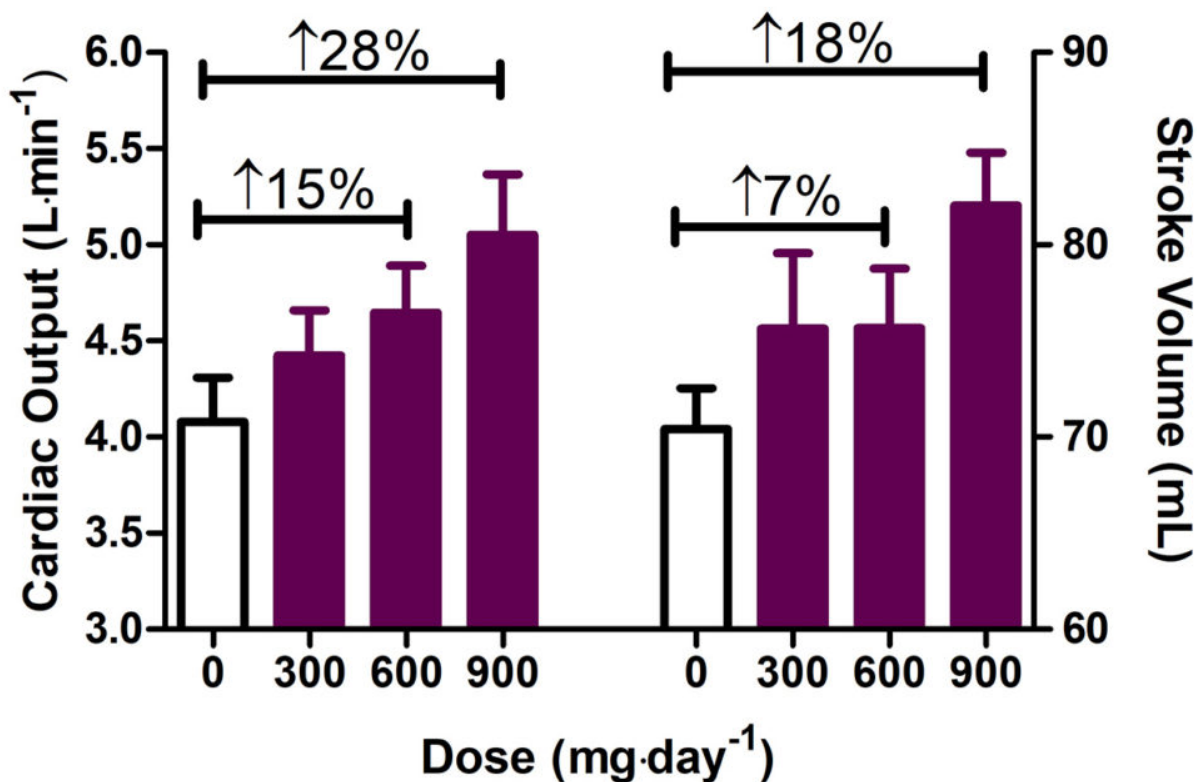


Fig. 1.

Blood pressure, cardiac output (i.e. the volume pumped by the heart per minute), stroke volume (the volume pumped per beat), and total peripheral resistance (i.e. the resistance of all the systemic blood vessels) are measures of cardiovascular function. They can all provide indications

of cardiovascular health and can be positively altered with exercise training. Previous research has shown that New Zealand blackcurrant extract can alter the resting cardiovascular function in trained cyclists and triathletes. However, research has never looked at effects of different doses of New Zealand blackcurrant extract on cardiovascular function in this population.

In our study, we had fifteen male endurance trained men who typically performed cycling exercise for 6 – 10 hours a week. Participants underwent 4 conditions (i.e. no dose, 300, 600 or 900 mg·day⁻¹ of New Zealand blackcurrant extract) in a Latin square design, meaning that each participant received the doses in a different order which was randomly allocated. Each dosing condition of New Zealand blackcurrant (CurraNZ) was taken for 7-days and athletes were tested for their cardiovascular function while lying on a bed.

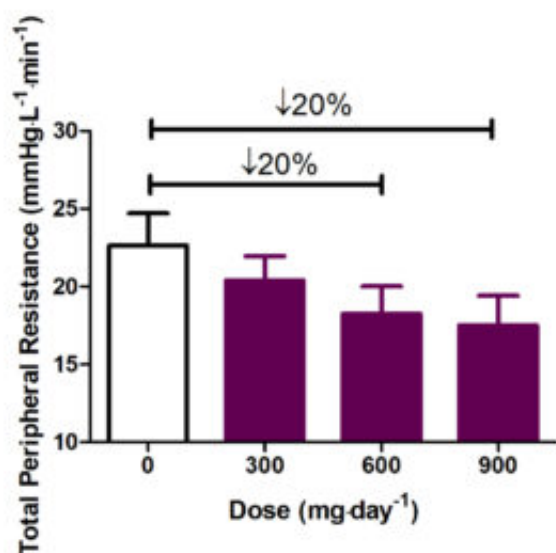


Fig. 2.

We observed that cardiac output and stroke volume increased with each dose of New Zealand blackcurrant taken (Fig. 1). Compared with no dose, 600 mg·day⁻¹ New Zealand blackcurrant increased cardiac output by 15%, while 900 mg·day⁻¹ increased it by 28%. For the same doses, stroke volume was increased by 7% with 600 mg·day⁻¹, while 900 mg·day⁻¹ increased it by 18%. Total peripheral resistance was decreased by 20% for the doses 600 and 900 mg·day⁻¹ (Fig. 2). The findings from this study provided the first observation of the effect of different doses of blackcurrant anthocyanins on cardiovascular function in trained individuals. Anthocyanins have been shown to influence cardiovascular responses in diseased and untrained populations, however the findings from our study indicate that responses can also be seen in trained individuals. These responses in trained individuals could have implications for nutritional strategies for recovery from exercise where blood flow is crucial.

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Publication

[Cardiovascular function during supine rest in endurance-trained males with New Zealand blackcurrant: a dose-response study.](#)

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