EFFECTS OF INTERMITTENT AND DAILY INTAKE OF ANTHOCYANIN-RICH NEW ZEALAND BLACKCURRANT EXTRACT ON CARDIOVASCULAR FUNCTION DURING SUPINE REST IN HEALTHY MALES

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INTRODUCTION

An acute intake of polyphenols results in plasma bioavailability of metabolites that can last for days [1]. Daily polyphenol intake can result in a build-up of metabolites [2]. It is not known whether the changes in cell, tissue and whole-body physiological function are associated with the level of plasma metabolites and whether daily intake of polyphenols is required to obtain those changes. Studies on the effects of the polyphenol anthocyanin by intake of New Zealand blackcurrant extract have mostly employed a dosing protocol that examined cardiovascular changes following 7-day intake [3,4].

AIM

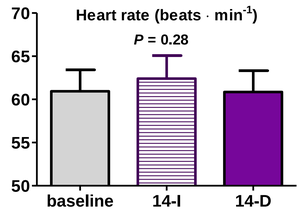
We examined the effects of every-other-day and daily intake of New Zealand blackcurrant extract over a 14-days period on cardiovascular function during supine rest.

METHODS

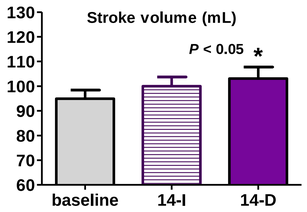
Healthy physically active males (n=15, age: 24±6 yr, body mass: 78±16 kg, height 177±7 cm, BMI: 24.7±4.3 kg·m^{-2} (8 normal weight, 6 overweight, 1 obese), body fat: 15±5%) volunteered. Participants visits included resting measurements at baseline (no supplementation), after 14-day intermittent intake (14-I, i.e. every other day) and 14-day daily intake (14-D) of two NZBC extract capsules (210 mg of anthocyanins for two capsules). Last dose was consumed one hour after breakfast of one slice of bread and water and 2 hours before visiting the laboratory. Cardiovascular measurements were obtained with a beat-to-beat blood pressure monitoring system (Portapres® Model 2, Finapres Medical Systems BV, Enschede, The Netherlands) (see below).

Expired air was collected for two times for 10 min with Douglas bags and volumes measured. Cardiovascular observations during the 10 min with the lowest minute ventilation were analysed.

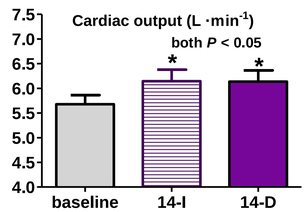
RESULTS



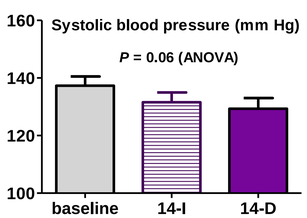
NZBC extract had no effect on heart rate in supine rest



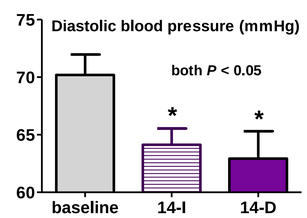
Daily intake of NZBC extract increased stroke volume in supine rest



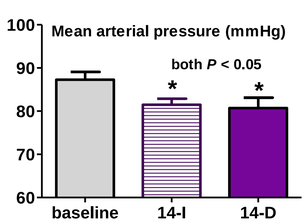
Daily and every-other-day intake of NZBC extract increased cardiac output in supine rest



NZBC extract had no effect on systolic blood pressure in supine rest

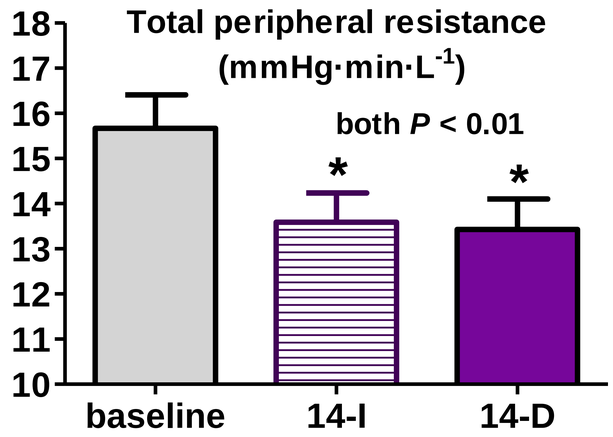


Daily and every-other-day intake of NZBC extract reduced diastolic blood pressure in supine rest



Daily and every-other-day intake of NZBC extract reduced mean arterial pressure in supine rest

RESULTS CONT'D



Daily and every-other-day intake of NZBC extract reduced total peripheral resistance in supine rest

CONCLUSION

Beneficial effects of intake of anthocyanin-rich NZBC extract on resting cardiovascular function can be obtained by intermittent (i.e. every other day) intake of 210 mg of anthocyanins. Future work may want to address the effects of longer intermittent intake than the 2-weeks employed in our study. It would also be of interest to examine plasma bioavailability of anthocyanin-derived metabolites with intermittent intake of NZBC extract.

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