INTRODUCTION

New Zealand blackcurrant (NZBC) has a high flavonoid content with primarily anthocyanins (1). Seven-day intake of NZBC extract showed enhanced exercise-induced whole-body fat oxidation (2,3). However, it is not known whether longer intake of NZBC extract (i.e. 14 days) has a higher effect on exercise-induced whole-body fat oxidation.

AIM

We examined the effects of intake duration (i.e. 7 and 14 days) of NZBC extract on metabolic and physiological responses during moderate intensity exercise.

METHODS

Sixteen physically active healthy males (age: 24±6 yr, body mass: 78±16 kg, BMI: 24.7±4.2 kg·m⁻², IPAQ score: 4385±1635 MET-week and 1) volunteered.

In the first visit, resting metabolic equivalent (1-MET: 3.95±0.64 ml·kg⁻¹·min⁻¹) was measured using Douglas bags. An incremental walking test was performed to determine the relationship between walking speed and MET.

A randomized, cross-over experimental design was used for baseline, 7-day and 14-day intake. For intake conditions, participants consumed 2 capsules of NZBC extract (600 mg and containing 210 mg of anthocyanins, CurraNZ™ Health Currancy Ltd., Surrey, UK) with breakfast with a 14-day washout. On the morning of testing, the final 2 capsules were ingested 2-hr before the 30-min brisk walk at 4 (n=3) or 5 (n=13) METs (walking speed: 5.66±0.65 km·hr⁻¹). Responses were measured at 7-10, 17-20 and 27-30 min during the walk and averaged and analysed with one-way repeated measures ANOVA and post-hoc student t-tests. Substrate oxidation was calculated with equations from Jeukendrup and Wallis (4).

RESULTS

Duration of intake had no effect on heart rate (baseline: 102±17, 7-day: 102±17, 14-day: 101±18 beats·min⁻¹), minute ventilation (STPD) (baseline 30.3±5.8, 7-day: 30.8±6.3, 14-day: 30.8±6.6 L·min⁻¹), oxygen uptake (STPD) (baseline: 1.50±0.30, 7-day: 1.52±0.32, 14-day: 1.51±0.33 L·min⁻¹) and RPE (baseline: 11±2, 7-day: 11±2, 14-day: 10±2).

Fat oxidation was enhanced with 7-day and 14-day intake of NZBC extract by 10% and 16% (*, different than baseline, P=0.007).

Carbohydrate oxidation during 30-min brisk walking (g·min⁻¹)

Only 14-day intake of NZBC extract resulted in lower carbohydrate oxidation (*, different than baseline, P=0.03).

CONCLUSIONS

It is concluded that 14-day intake of New Zealand blackcurrant extract seems to favour fat more as an energy source during brisk walking compared to 7-day intake. Intake duration of anthocyanin-rich blackcurrant extract may need to be considered when regular moderate intensity exercise is undertaken for body weight management. However, the intake duration of NZBC extract to optimize exercise-induced fat oxidation is not known.

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