ANTHOCYANIN-RICH NEW ZEALAND BLACKCURRANT EXTRACT ENHANCES WHOLE-BODY RESTING FAT OXIDATION IN PHYSICALLY ACTIVE MALES

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Mark Willems[1], Pelin Bilgiç[2], Stefano Montanari[1], Mehmet Şahin[1,2]

[1]University of Chichester, Institute of Sport, Nursing and Allied Health, United Kingdom
[2]Department of Nutrition and Dietetics, Hacettepe University, Ankara, Turkey

Email: m.willems@chi.ac.uk

INTRODUCTION

New Zealand blackcurrant (NZBC) is a berry rich in the anthocyanins cyanidin-3-*O*-glucoside, cyanidin-3-*O*-rutinoside, delphinidin-3-*O*-glucoside and delphinidin-3-*O*-rutinoside. Seven-day intake of NZBC extract provided observations on enhanced exercise-induced fat oxidation in Caucasian males [1] and females [2]. In Thai males, however, 7-day intake of NZBC extract did not affect fat oxidation during supine rest and treadmill walking [3], maybe due to the short intake duration.

AIM

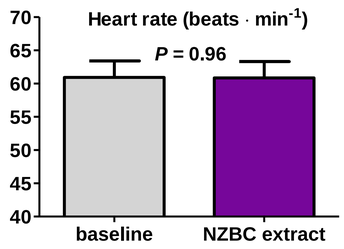
To examine the effects of 14-day intake of New Zealand blackcurrant extract on resting metabolic and physiological responses in Caucasian males.

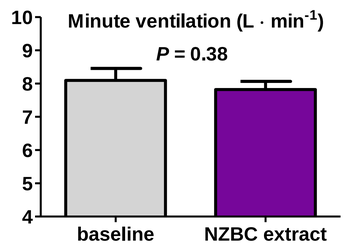
METHODS

Healthy men (n=16, age: 24±6 yr, body mass: 78±16 kg, height 178±6 cm, BMI: 24.7±4.1 kg·m^{-2} (8 normal weight, 7 overweight, 1 obese), body fat: 15±6%) volunteered for the study with a randomised, cross-over design. Participants visited the laboratory for resting measurements at baseline (no supplementation) and after 14-day New Zealand blackcurrant extract intake. Two capsules of New Zealand blackcurrant extract (600 mg containing 210 mg of anthocyanins [CurraNZ®, Health Currancy Ltd (Surrey, UK), CurraNZ Ltd (NZ)] were consumed every morning with breakfast.

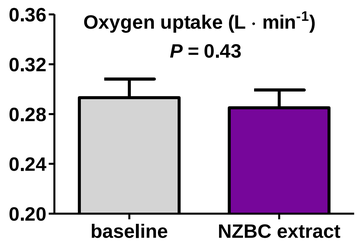
Participants consumed the last 2 capsules two hours before the visits and had one slice of bread and water 3 hours before the visits. Participants were asked to lie horizontally on a massage table for resting measurements using Douglas bags with indirect calorimetry techniques and heart rate recording. Gas volumes were calculated using Haldane transformation and standardized to STPD conditions with consideration of inspired fractions of oxygen and carbon dioxide. Respiratory exchange ratio was calculated as the ratio between the carbon dioxide produced and oxygen consumed. Rates of whole-body resting fat and carbohydrate oxidation were calculated with equations from Frayn [4] with the assumption of negligible protein oxidation. All data are reported as mean±SEM and significance was accepted at P≤ 0.05.

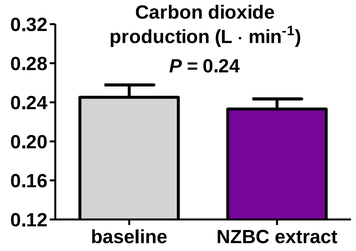
RESULTS



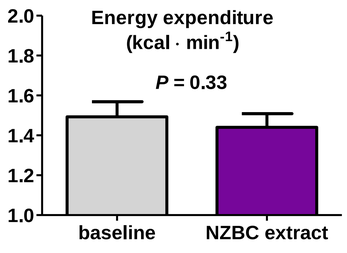


NZBC extract had no effect on heart rate and minute ventilation during supine rest in males

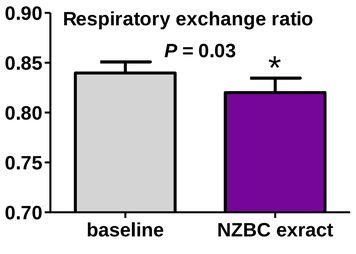




NZBC extract had no effect on oxygen uptake and carbon dioxide production during supine rest in males

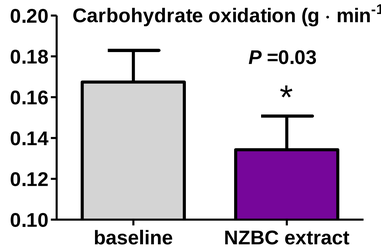


NZBC extract had no effect on energy expenditure during supine rest in males

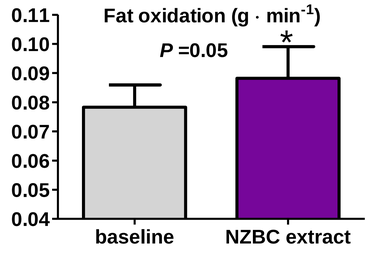


NZBC extract provided lower respiratory exchange ratio during supine rest in males

RESULTS CONT'D



NZBC extract provided lower carbohydrate oxidation during supine rest in males



NZBC extract provided higher fat oxidation during supine rest in males. Twelve participants (75%) had higher fat oxidation with for those an increase of 21±17%.

CONCLUSION

14-day intake of New Zealand blackcurrant extract alters substrate oxidation during supine rest in males.

APPLICATION

New Zealand blackcurrant extract may be useful for individuals with weight management issues.

REFERENCES

[1] Cook MD, Myers SD, Blacker SD, Willems MET. New Zealand blackcurrant extract improves cycling performance and fat oxidation in cyclists. *Eur J Appl Physiol* 115(11):2357-2365, 2015.

[2] Strauss JA, Willems MET, Shepherd SO. New Zealand blackcurrant extract enhances fat oxidation during prolonged cycling in endurance-trained females. *Eur JAppl Physiol* 118(6):1265-1272, 2018.

[3] Willems MET, Parktin N, Widjaja W, Ajjimaporn A. Effect of New Zealand blackcurrant extract on physiological responses at rest and during brisk walking in Southeast Asian men: a randomized, double-blind, placebo-controlled, crossover study. *Nutrients* 10(11), 1732, 2018.

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