

# The impact of drink flavour change on endurance cycling performance in well-trained athletes.

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## Introduction

Sensory responses in the lingual epithelium to fluid texture, viscosity, temperature, salts, proteins and fats play important roles in the central responses to beverages (Katz et al 2000). Furthermore, it has been recently demonstrated that exercise performance can be affected by beverages that are washed in the mouth but not ingested (Carter et al 2004). To date there are no peer-reviewed publications directly investigating the impact of drink flavour change on exercise performance when beverage volume is controlled. The aim of this study is to examine the effect of drink flavour change on cycling performance. More specifically, this study attempts to clarify whether the consumption of a Cola beverage during the later stages of an endurance cycling protocol improves subsequent time trial performance.

## Methods

Eight highly trained male cyclists or triathletes [age  $24.3 \pm 3.9$  yr, mass  $74.7 \pm 6.0$  kg, peak O<sub>2</sub> uptake ( $VO_{2\text{ peak}}$ )  $65.4 \pm 5.4$  ml/kg/min; values are mean  $\pm$  SD] who were cycling  $\geq 200$  km/wk were recruited to participate. Each subject undertook three experimental trials, with training and nutritional status being controlled before each trial. Each experimental trial consisted of 120 min of steady-state cycling at 70%  $VO_{2\text{ peak}}$  (SS) immediately followed by a 7 kJ/kg TT. Subjects were provided with drinks prior to and throughout the 2.5 h. The 3 x 5 ml/kg sports drinks provided at 80 and 100 min of SS and during the TT consisted of either: 1) Lemon-Lime flavoured Powerade<sup>®</sup> (control); 2) Mountain blast Powerade<sup>®</sup> (alternate flavour sports drink; AFSD) and 3) decaffeinated, de-fizzed cola-flavoured drink (Cola). The AFSD and Cola beverage contained the same CHO concentration, CHO type (i.e. sucrose + glucose polymer), and sodium and potassium concentration as the control beverage. All beverages were provided in opaque bottles and stored under the same environmental conditions. Data from the three trials were compared by using a two-factor (treatment and time) ANOVA with repeated measures. Newman-Keuls post hoc tests were conducted when ANOVA revealed a significant difference or interaction between treatments. All testing procedures were approved by the Griffith University Human Research Ethics Committee.

## Results

The various drink flavours produced no significant treatment effects on TT time, HR, Blood Glucose or RPE throughout the exercise protocol. No bias was observed towards one preferred flavour, however, subjects reported wider variability in hedonic ratings of beverage "liking" towards the cola beverage.

**Table 1. Results of 7 kJ/kg TT following 120 min of steady-state cycling**

Treatment	TT Time (min:ss)
SD	27:16 $\pm$ 03:12
AFSD	27:01 $\pm$ 03:18
Cola	27:03 $\pm$ 02:42

## Discussion/Conclusion

A change of sports drink flavour or the ingestion of a cola flavoured beverage in the later stages of an endurance cycling task failed to influence time trial performance. The positive effects seen previously when Coca-Cola is consumed during the later stages of endurance cycling (Cox et al 2002) do not appear to be related to any central effects caused by the different organoleptic properties of the cola drink. The possibility that drink preference may influence cycling performance requires further examination.

## References

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