

Glycine-arginine-alpha-ketoisocaproic acid does not improve performance of repeated supramaximal cycling sprints in trained cyclists

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BACKGROUND: Amino acids are essential for protein synthesis and muscle formation and are involved in numerous metabolic pathways affecting exercise metabolism. Consequently, it has been suggested that athletes involved in intense training and competition, supplement their diet with specific amino acids. For example, oral supplementation with glycine-arginine-alpha-ketoisocaproic acid (GAKIC) has previously been shown to improve performance during exhaustive high-intensity anaerobic isokinetic exercise [1] and attenuate the decline in mean power during five repeated cycle sprints [2]. **PURPOSE:** The aim of the present study is to examine the effects of GAKIC on fatigue during prolonged, repeated cycle sprints in trained cyclists. **METHODS:** After at least two familiarisation trials, seven well-trained male cyclists (Aged 25-44 years) completed two supramaximal sprint tests each involving 10 sprints of 10 s separated by 50 s rest intervals on an electrically braked cycle ergometer. Computer software was used to calculate power output at each second of the sprint allowing calculation of both 10 second mean power and peak power output. Furthermore, the fatigue index was determined using the following equation: fatigue index % = [(peak power – minimum power)/peak power] x 100. During a period of 45 min prior to these two tests, subjects ingested 11.2 g of GAKIC (2.0 g glycine plus 6.0 g L-arginine monohydrochloride plus 3.2 g [alpha]-ketoisocaproic acid calcium salt) or placebo (Pl) (composed of 9.46 g sucrose plus 3.2 g calcium carbonate) administered in a randomised and double blind fashion. Supplements were dissolved in 450 ml of sugar free fruit juice, divided into 3 equal aliquots of 150ml and consumed 45, 30 and 20 min prior to the trial. **RESULTS:** Peak power declined from the 1st sprint (mean \pm s.d.) (Pl: 1332 \pm 307, GAKIC: 1367 \pm 342 W) to the 10th sprint (Pl: 1091 \pm 229, GAKIC: 1061 \pm 272 W) but did not differ between treatments ($P=0.88$). Mean power declined from the 1st sprint (Pl: 892 \pm 151, GAKIC: 892 \pm 153 W) to the 10th sprint (Pl: 766 \pm 120, GAKIC: 752 \pm 138 W) but did not differ between treatments ($P=0.96$). In general, the fatigue index remained stable throughout the series of sprints and did not differ between treatments ($P=0.99$). Subject's rating of perceived exertion increased from the 1st sprint (Pl: 13 \pm 3, GAKIC: 13 \pm 3) to the 10th sprint (Pl: 19 \pm 1, GAKIC: 20 \pm 1) but did not differ between treatments ($P=0.11$). **CONCLUSIONS:** In contrast to previous studies, these results do not support an ergogenic effect of GAKIC during repeated bouts of high intensity exercise.

REFERENCES:

1. Stevens BR, Godfrey MD, Kaminski TW & Braith RW (2000). High-intensity dynamic human performance enhanced by a metabolic intervention. *Med Sci Sports Exerc*, 32: 2102-2108.
2. Buford BN & Kock AJ (2004). Glycine-Arginine-[alpha]-ketoisocaproic acid improves performance of repeated cycling sprints. *Med Sci Sports Exerc*, 36: 583-587.