Abstract

INTRODUCTION: A physiological measure often used to detect metabolic changes during exercise is measurement of blood lactate concentration. Lactate is produced by working muscle and is the end-product of anaerobic glycolysis. Some of it diffuses into the blood, and during exercise, heart fibers and ST fibers in working muscle take up most of the lactate and convert it back into pyruvate, which then enters the Krebs cycle (aerobic system). During exercise recovery, however, most of the lactate is removed from blood by the liver. Certainly, blood lactate concentrations reflect exercise intensity. However, the rapid accumulation of lactate in the blood, which is sometimes called the anaerobic threshold, is not an indication that there was a sudden shift of ATP production away from aerobic to anaerobic metabolism. Rather, it reflects that lactate production by working muscle finally exceeded the ability of the tissues to remove it from the blood. PURPOSE: The purpose of this study was to evaluate the effect of beta-alanine supplementation on blood lactate levels.

METHODS: Five men (M, age 22.4 ± 2.07 yrs) from UTA volunteered to participate in this study. Each subject had their height and weight taken beforehand. Each subject was given a placebo to take for a week before each test period. After each week the subject was given the placebo or the beta-alanine supplement. A total of 3 visits were required for the participants, each lasting an average of 1 hour. During each visit the subject was taken to the research lab to complete a maximal exercise test on a cycle ergometer.

RESULTS: Blood lactate levels were recorded. Heart rate (HR), rate of perceived exertion score (RPE) were recorded. The values for blood lactate (pre 3.58 ± 0.71 mmol/L) reached significance (p = 0.029). The values for HR (pre 119 ± 1.67 bpm; post 117 ± 8.91 bpm) and RPE (pre 11.68 ± 0.76; post 11.22 ± 0.91) did not reach significance (p > 0.05). Time of exercise (pre 12:35 ± 0.05 minutes; post 14:03 ± 0.07 minutes) did reach significance (p = 0.041).

Conclusions

The results of this study indicate that beta alanine supplementation had an effect on blood lactate levels for a maximal test. The results also suggest that beta-alanine also had a significant effect on the time of exercise as well.

Reference

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