Exercise Biochemistry Review

Proceedings of IBEC 2018, Beijing, China, October 23-25
PO-067

Effects of oral Lycium barbarum juice in red blood cell antioxidant biomarkers and physical function during 8 days of aerobic exercise

Chaoge Wang[1],Xiquan Weng[2],Yu Chen[3],Jieru Lin[2]
1.Graduate school，Guangzhou Sport University
2.Exercise Biochemistry Laboratory，Guangzhou Sport University
3..International Department， The Affiliated High School of SCNU

Objective Lycium barbarum polysaccharide (LBP) is the main active components of Lycium barbarum, its benefits to anti-aging, vision, kidney, and liver functions. Nevertheless, there is still a scarcity of experimental evidence to support the effect of Lycium barbarum on aerobic exercise.This a randomized controlled trial was observed the effects of oral Lycium barbarum juice in red blood cell antioxidant biomarkers and physical function during 8 days of aerobic exercise.
Methods 28 healthy male college students were divided into control group（16）and experimental group（12），and underwent interval running once every other day，total of 8 days. Exercise program: An exercise session includes two 30-minute aerobic exercises at 60%VO2max and a five-minute break. For the duration of the 8 days period, participants exercised one time every other day and the experimental group drank 100ml Lycium barbarum juice (each LBP content 360-440mg%) at bedtime every night. In ninth days, all the experimenters did exhaustive exercise with 80%VO2max on a treadmill with 8°.simultaneous recording of motion duration. The levels of red blood cell SOD, MDA, GSH-PX, serum CAT, serum TAC and other oxygenation stress markers and BLA, Glu, Urea, CK, Urine eight items and other physical function indexes of the subjects were determined before the experiment and after the completion of each intensity exercise. Differences between before and after intervention values were tested using a paired t test.And to compare the mean of outcomes in quantitative variables between the 2 groups, a independent t-test was used. The SPSS software (version 17, SPSS Inc, Chicago, IL, USA) was applied for data analysis and statistical significance was accepted at $P < 0.05$.
Results (1)After 8 days of oral Lycium barbarum juice, the exhaustion time of exercise force in the experimental group was 30.76 ±12.19min, while the control group was 23.64±8.56min. Compared with the control group, the average exercise exhaustion time of the experimental group was prolonged 7.12min. (2)The red blood cell SOD in the two groups after 8 days of aerobic exercise had significant and significant improvement ($P < 0.05$, $P < 0.01$), and moreover, the increase of the experimental group was significantly higher than that of the control group ($P < 0.05$).As well as, the blood erythrocyte GSH-PX and serum TAC were significantly enhanced after the experiment ($P < 0.01$).It is suggested that increasing the levels of SOD and GSH-PX in vivo is beneficial in scavenging the free radicals produced by body movement. (3)After the 8 days oral Lycium barbarum juice, the decrease of MDA in blood red blood cells in the experimental group was greater than that of the control group ($P < 0.01$), indicating that the juice of Lycium barbarum could reduce the production of lipid peroxide products. (4) Exhaustion exercise after 8 days of oral Lycium barbarum juice, the physical function indexes of the experimental group, such as BLA, Urea, and CK were reduced. The positive rate of eight urine items was less than that in the control group, 8 in the control group, 2 for bilirubin positive, 3 in the urinary occult blood and 5 in the urine protein, while only 1 in the experimental group were positive for urine protein.

Conclusions Oral Lycium barbarum juice can improve the activity of antioxidant enzymes during aerobic exercise, reduce the formation of lipid peroxides in the body, protect the biological function of red blood cells, improve the physical function and postpone the production of sports fatigue.