The Effect of chlorophyll Intake before Exercise on Blood Lactate and the Pressure of Oxygen

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Background: 2000m rowing load puts the used muscles under high degree of anaerobic stress. In the past, scientists were interested to know if and how to keep the muscles moving during an anaerobic state. Some researches related to supplementation, where most emphasis is given to the maintenance of energy metabolism. Through supplements enhancing blood oxygen, chlorophyll has been found to promote capillary dilatation and hemoglobin function. Therefore, this study wants to discuss the effect of chlorophyll intake before 3×1000m rowing exercise on blood pH, pressure of oxygen, average rowing speed and the exclusion rate of lactate.

Methods: The study included 8 young male rowing athletes (17.5±0.8years, 180.1±3.5cm, 76.8±7.9kg). The tests were divided into two using a counter balance design, one with chlorophyll intake and the other one without. The 3×1000m rowing tests started one hour after 200mg chlorophyll intake. The rowing tests took place on two different days on an indoor rowing ergometer (Concept-II). Blood samples were taken at rest before exercise and 1^{st}, 3^{rd}, 5^{th}, 7^{th}, 10^{th} and 15^{th} min after exercise for blood lactate. PO_2 and pH were diagnosed after the first and third 1000m rowing. The differences of lactic acid, pH, PO_2 and average rowing speed between the two tests were analyzed using the paired *t*-test. Statistical significance was accepted at $p<0.05$.

Results: After 3×1000 m rowing test, the exclusion rate of blood lactate was significantly higher ($p<0.05$) in the trial including chlorophyll intaked than in the control trial (36.84% vs. 26.79%). However, there were no significant differences in average rowing speed and blood pH ($p>0.05$). In the chlorophyll intake trial, PO_2 was higher than in the control trial in the first (79.50±7.71 vs. 68.88±8.04mmHg, $p>0.05$) and third (83.63±9.52 vs. 80.75±11.64mmHg, $p>0.05$) 1000m rowing tests.

Conclusion: Although the intake of chlorophyll before the test could not enhance athlete's performance, it could provide a more effective transportation of oxygen in the blood. Before the test, the intake of chlorophyll actually increased the exclusion rate of lactate, which helps athletes to recover more quickly.