Ergogenic Aids as a Means for Increasing Athlete Working Capacity in the High Altitude Environment

Sergiy Oliynyk, & V. Shevchenko
National University of Physical Education and Sports of Ukraine, Kyiv, Ukraine

Dietary supplement Antihot® was tested as a potential means for increasing human working capacity in a high altitude environment. During three days the volunteers (athletes specializing in mountaineering) climbed to the height of 3,700 m above sea level by marches of 15 km each with a load of 35-40 kg. Twenty nine young men aged 20-35 years old participated in the trip, and 15 of them were taking Antihot® in capsules, 1 capsule (0.5 g) three times a day during a meal, for 4 days. The other 13 men, who were included in the control group, were taking a placebo under a similar routine. Besides hypoxic hypoxia the ascent was complicated by the night temperature fall to −5 C, preventing the climbers from having rest and recreation. It was registered that with taking Antihot® the climbing was easier to tolerate. The number of complaints recorded in a mountain experience questionnaire decreased, and, above all, the course of halt recreation had run much quicker. In the upland environment, the improvement of a feeling of health was recorded, physical loads got easier to overcome, and fatigue was lowered. A distinct decrease of hypoxic hypoxia was registered. Symptomatology relevant to the presentations of acute mountain pathology developed to a minor ratio and virtually did not affect on the volunteers’ functional condition and their working capacity. In comparison to the control group the average number of complaints decreased to 4 times less, including cerebral and common complaints which decreased by 6 times less, cardiorespiratory ones to 2.5 times less, and digestive and excretory complaints - 20 times less. These results are sure to argue for distinct antihypoxic action by Antihot®. Heart rate is a general parameter of physiological function tension. At the post-ascent examination of the climbers who had taken Antihot®, it remained lower than background meaning both at rest and while conducting a loading test by 5.5 and 11.4%, respectively. In aggregate with a reliable increase of breath-holding (Stange test) by 25.5% against taking Antihot®, results argue for a favorable preparation impact on the functions of the oxygen transportation system, rapid and complete removal of oxygen debt and, maybe, as a whole, for a decrease of tension level in the body’s physiological systems, thus, facilitating adaptation and working capacity in a high altitude environment. Therefore, Antihot® has displayed high efficacy in increasing tolerance to unfavorable factors of environment in high altitude as well as in facilitating tolerance to physical loading and maintaining a feeling of well-being during the whole stay in the mountains.

key words: Antihot®, high altitude environment, athletes, working capacity
Introduction

The problem of increasing the athletes’ working capacity in the high altitude environment is an urgent one for mountaineering and many other sports, for which the stay in the high altitude environment is not a specific sports performance but an essential element of sports training (training performance in middle-height and high mountains) (Platonov, 2004).

Most researches, practical recommendations and the experience of athletic preparation deal with an altitude ranged between 1550 and 2000 m. Meanwhile, there is also a considerable interest concerning athletes’ training in the high mountain environment at an altitude of 2500-3000 m and 3500-4000 m. In particular, the practice of specialists of the former GDR and some other countries using the altitudes of 3500-4000 m while training long-distance runners is recognized (Fuchs & Reiss, 1990).

At that, the body’s potential for an effective regulation of cardiovascular and respiratory systems drops dramatically even in highly-skilled athletes, well-adopted to the conditions of high mountains and as a result, their parameters of general and special performance, decrease too (Platonov, 2004). Based on these considerations, there can be no doubt that administration of pharmacological agents and dietary supplements at training in high mountain environment is expedient.

Among the pharmacological agents for increasing special working capacity of athletes in such an environment, our attention was attracted by the dietary supplement Antihot®. This agent has demonstrated actoprotective and antiasthenic properties, which were found in patients with asthenia and neurocirculatory dystonia. Further investigations proved a positive impact of DS Antihot® on the parameters of athletes’ general and special working capacity partially related with antioxidant properties of this agent (Koval et al., 2003; Koval et al., 2004).

Antihot® is the representative of actoprotectors of the new brand of drugs which increase tolerance, most importantly that of endurance capacity. Their effect consists in selective stimulation of protein synthesis among non-carbohydrates components (deaminative rests of amino acids, glycerol, pyruvate, lactate & others), i.e. the activation of gluconeogenesis in liver, kidneys and bowels. So, actoprotectors remove the fatigue after training allowing one to perform a great amount of physical work including such work which demands strength. Acto-protectors are slightly toxic and they don’t bring on any addiction or dependence. They have