

**SEASONAL ACTIVITY CHANGES OF  
CARBOHYDRATE-ENERGY AND  
PROTEIN METABOLISM TISSUE  
ENZYMES IN BLOOD OF NON-ADULTS  
LIVING IN CONDITIONS OF A PLAIN**

Nikitina V.V., Abdulnatipov A.I.

Sharapkikova P.A.

*Dagestan State Medical Academy  
Makhachkala, Russia*

The ability of enzyme systems to adaptation underlies the adaptive reactions of a body to various factors' actions, natural climatic one among them; that is why, on the ground of the data for this occurrence, one can characterize the adaptive abilities and homeostatic forces of a body in different age on the level of enzyme systems.

In this respect we have investigated the activity indexes of some enzymes of carbohydrate-energy and protein metabolism in blood of children and teenagers. The objects of the research were children and teenagers living in the city of Makhachkala. To carry out the research in the age aspect 70 learners of 9, 11, 13, 14 and 17 years old were selected.

When compared in autumn and spring the activity of both general and isozyme lactate dehydrogenase in the blood of non-adults, living in the conditions of a plain, a specific law in changing of these figures is observed. This law is reflected in the fact that the activity of general lactate dehydrogenase in autumn period is notably higher in the investigated age periods. The activity of isozymes in non-adults' blood changes similarly to total activity of lactate dehydrogenase. The results of the research on defining glucose-6-phosphate dehydrogenase in blood serum of non-adults, living in conditions of a plain, in autumn and spring showed the highest level of the enzyme activity at the age of 9: in autumn -  $400 \pm 7,3$  mE/l, and in spring -  $390 \pm 3,53$ mE/l. In the following age periods the enzyme activity changes ambiguously. At the age of 11 a considerable glucose-6-phosphate dehydrogenase activity decrease is registered; in spring this enzyme activity decreasing much more than in autumn and makes in autumn -  $260 \pm 8,1$ mE/l, and in spring -  $191 \pm 2,7$ mE/l. In teenagers of 13 and 14 in autumn the glucose-6-phosphate dehydrogenase activity increases considerably compared to the previous age group. In teenagers of 13 the activity of glucose-6-

phosphate dehydrogenase increases in spring, and at the age of 14 somehow ( $p < 0,05$ ) decreases compared to the previous age group. At the age of 17 the activity of this enzyme decreases again ( $p < 0,05$ ) compared to the previous age group and makes in autumn  $360 \pm 4,7$ mE/l, and in spring -  $290 \pm 3,1$ mE/l. The activity of alaninaminotransferase in the blood of non-adults, living in conditions of a plain, in autumn and spring during the investigated age periods suffers specific changes which lie in the fact that at the age of 9 the enzyme activity is low: in autumn -  $7,1 \pm 0,6$  mE/l, and in spring -  $6,7 \pm 0,7$  mE/l. In the following age periods (11, 13 and 14 years old) both in autumn and spring the enzyme activity decreases practically evenly. At the age of 17 the alaninaminotransferase activity decreases inconsiderably compared to the previous age group and makes in autumn  $16,5 \pm 0,9$ mE/l, and in spring -  $16,0 \pm 1,7$ mE/l. The aspartataminotransferase activity research results show that the activity of this enzyme decreases essentially both in autumn and in spring by the age of 14. In autumn in teenagers of 14 this enzyme activity makes  $21,5 \pm 1,3$  mE/l instead of  $12,5 \pm 1,3$  mE/l in 9-year-old children. In spring the aspartataminotransferase activity in teenagers of 14 makes  $20,9 \pm 2,9$  mE/l instead of  $11,9 \pm 1,1$  mE/l in 9-year-old children. At the age of 17 the enzyme activity in the blood of teenagers decreases insignificantly ( $p > 0,05$ ) compared to 14-year-old teens and makes in autumn  $20,1 \pm 1,1$ mE/l, and in spring -  $19,5 \pm 1,5$ mE/l. The results of the research on defining alpha-amylase activity in different age periods show that the activity of this enzyme in the blood of non-adults, living in conditions of a plain, both in autumn and in spring suffers no essential changes. Thus, in autumn the activity of alpha-amylase in children of 9 years old made  $3,51 \pm 0,41$  mE/l, and at the age of 17 -  $2,75 \pm 0,35$ mE/l. In spring the alpha-amylase activity in children at the age of 9 made  $2,9 \pm 0,4$  mE/l, and at the age of 17 -  $2,08 \pm 0,9$ mE/l.

---

The article is admitted to the International Scientific Conference "Homeostasis and infectious process", Moscow, May, 14-16th 2007г, came to the editorial office on 19.03.07