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CHANGES TO THE CONTENT OF THE GENERAL THE AMOUNT OF GLYCOGEN, SALT-SOLUBLE PROTEINS AND TOTAL LIPIDS BY SEASON

ИЗМЕНЕНИЕ СОДЕРЖАНИЯ ОБЩЕГО КОЛИЧЕСТВА ГЛИКОГЕНА, СОЛРАСТВОРИМЫХ БЕЛКОВ И ОБЩИХ ЛИПИДОВ ПО СЕЗОНУ

GLIKOGEN, TUZDA ERİYOR OQILLAR VA UMUMIY LIPIDLAR MAVSUM BO‘YICHA UMUMIY MAZMUNINING O‘ZGARISHI

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Annotatsiya

Ishda mavsum va asoslar bo‘yicha glikogen, tuzda eriydigan oqsillar va jami lipidlarning umumiy tarkibidagi o‘zgarishlar o‘rganildi, bu qish va kuzda gaz almashinuvi va nafas olish koeffitsientidagi miqdoriy o‘zgarishlar tajribasining davomi edi.

Аннотация

В работе изучены изменения общего содержания гликогена, солерастворимых белков и общих липидов по сезонам и основаниям, что явилось продолжением опыта количественных изменений газообмена и дыхательного коэффициента зимой и осенью.

Abstract

The work studied changes in the total content of glycogen, salt-soluble proteins and total lipids by season and basis, which was a continuation of the experience of quantitative changes in gas exchange and respiratory coefficient in winter and autumn.

Key words: *Season, gas exchange, respiratory coefficient, glycogen, lipids.*
Ключевые слова: *сезон, газообмен, дыхательный коэффициент, гликоген, липиды.*
Kalit so‘zlar: *fasl, gaz almashinuvi, nafas olish koeffitsienti, glikogen, lipidlar.*

INTODUCTION

Under experimental conditions, changes in salt-soluble solutions of the content in the tissues of skeletal muscles of rats in the liver, glycogen, total lipids and proteins were studied during summer and winter periods according to the seasons of the year. During winter periods in rats, the amount of oxygen consumption and carbon dioxide release was high and equaled 2.02 and 1.71 ml g/ hour. Respiratory coefficient at the same time was 0.85. In summer, oxygen consumption, the intensity of gas exchange under similar standard conditions was noticeably lower. The level of oxygen consumption in terms of body weight in rats in the summer group averaged 73 ml, and the release of carbon dioxide was 19.75% less than in rats in the winter group. Value respiratory coefficient in animals than in rats of the winter group and is 0.80. This indicates that the change of seasons is accompanied not only by quantitative changes, but also by qualitative changes in metabolism. Thus, the results obtained showed that the intensity of gas exchange, and therefore Heat production in the body decreases during the summer period, which is an adaptive act aimed at maintaining temperature homeostasis. Indeed, a comparison of rectal temperature values by season revealed that its level in animals of the winter and summer groups does not differ significantly. Thus, if the value of rectal temperature, according to our data, in the winter group of animals averaged 36.5 ± 0.03, then in the summer group it was 36.6 + 0.03. The above data indicate that in rats, in the summer compared to the winter period, in relative dormancy and at moderate ambient temperatures, there is a decrease in energy costs used to maintain temperature homeostasis. This, in turn, contributes to more economical use of energy sources. This idea was confirmed by our experimental data obtained when studying the state of energy resources in the tissues of the liver and skeletal muscles. The results of experiments studying the

concentration of glycogen, total lipids and salt-soluble proteins in the tissues of various organs by season are shown in Table 1. Analysis of the data obtained shows that the content of these substances in the tissues of the same organ varied heterogeneously over the seasons. Thus, the concentration of glycogen in the liver of the summer group of rats was slightly higher (5.6%) than that of the winter group. However, this difference is not reliable. On the contrary, the concentration of salt-soluble proteins

Table 1

Concentration of glycogen, total lipids and salt-soluble proteins (mg/g wet weight) in the liver and skeletal muscles of experimental rats by season (n=10)

Season	Concentration					
	In the liver			In the muscles		
	glycogen	General lipids	protein	glycogen	General lipids	protein
1.Winter	19.7±0.7	56.7±0.8	104±2	8.5±0.06	25.1±0.7	51±1.9
2.Summer	20.8±1	56.1±1.6	96.8±2	5.5±0.06	26.5±1.1	56±1
P 12	<0.05	>0.05	<0.01	<0.001	>0.05	<0.05

However, this difference is not reliable. The concentration of salt-soluble proteins, on the contrary, was lower (by 6.9%, $P < 0.01$) than in animals of the winter group. When comparing the values of total lipids in winter and summer groups of animals, no significant differences in their levels were revealed (Table 1).

When comparing data obtained from winter and summer groups of animals, noticeable differences in the studied substances were also found in skeletal muscle tissue. In animals studied in summer, the glycogen concentration was significantly higher and amounted to 57.1% of the initial value. The concentration of salt-soluble proteins in the muscle tissues of animals of the summer group (9.8%) was also slightly increased. At the same time, the content of total lipids did not undergo significant changes. Analysis of the experimental data obtained showed that the concentration of protein, glycogen and total lipids in saline solutions does not change the same across the seasons.

Table 2.

The total amount of glycogen, lipids and salt-soluble proteins (mg per 100 g of body weight) in the liver and skeletal muscles of experimental rats by season (n=10)

Season	Liver weight, g per 100 g body weight	In the liver			Muscle weight, g per 100 g body weight	In the muscles		
		glycogen	General lipids	Protein		glycogens	General lipids	protein
Winter	2.9±0.08	57±2.7	162±4.2	300±8	43.6±0.8	167±6	1094±80	2218±75
Summer	3.6±0.08	76±2.1	204±7.8	349±7	40.8±0.7	238±7	1080±48	2253±79
P12	<0.001	<0.001	<0.001	<0.001	<0.02	<0.001	>0.05	>0.05

Table 2 shows the total content of glycogen and other studied substances in the liver and skeletal muscles of animals for different seasons of the year. From these data it is clear that the gross glycogen content in the liver on average in winter was 57 mg per 100 g of body weight. In the summer, the supply of glycogen in the liver tissue increases significantly, amounting to 76 mg per 100 g of the animal's body, i.e. the increase in glycogen was equal to 33.3%. The gross content of total lipids and salt-soluble proteins in it in the summer group of animals was also significantly higher and amounted to 25.9% and 16.3%, respectively. Changes by season of the year in the gross content of certain energy substances were also very peculiar. resources in animals in muscle tissue. In summer, only the glycogen content was increased in skeletal muscles. Its increase is 42.5%. The total amount of lipids and salt-soluble proteins in rats of the winter and summer groups did not differ significantly.

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