

Research results and their discussion. Studies of the activity of serum enzymes in young pigs have shown that they correspond to the physiological norm of clinically healthy animals. Thus, the average activity of alanine aminotransferase (ALT) is 1.30 mmol/h/l, aspartate aminotransferase (AST) - 1.89 mmol/h/l, alkaline phosphatase - 278.40 units/l, respectively. The coefficients of variability of serum biochemical parameters range from 11.12 to 34.95%. Samples of the longest back muscle in terms of physicochemical properties and chemical composition belong to the category of "normal quality". Thus, the moisture holding capacity of muscle tissue was $59.38 \pm 1.517\%$, the intensity of its color - 72.83 ± 3.343 units. ext. $\times 1000$, tenderness - 9.42 ± 0.419 s, fat content - 2.39 ± 0.647 , total moisture - 73.07, protein - 23.18, calcium - 0.131, phosphorus - 0.047%. Significant correlation coefficients with a probability of $P < 0,05-0,01$ were established by the following pairs: activity of AST \times active acidity (pH) - $+ 0.637 \pm 0.2432$ (tr = 2.62), activity of AST \times color intensity - $+0.659 \pm 0.2378$ (tr = 2.77), ALT activity \times color intensity - $+ 0.593 \pm 0.2546$ (tr = 2.32), alkaline phosphatase activity \times "phosphorus content" - -0.612 ± 0.2500 (tr = 2.44).

Conclusions. Biochemical parameters of blood serum (AST, ALT, alkaline phosphatase) of young pigs of the experimental group correspond to the physiological norm of clinically healthy animals, samples of the longest back muscle in physicochemical properties and chemical composition - to the category of "normal quality". The correlation coefficients between traits range from -0.606 ± 0.2515 (tr = 2.41) to $+ 0.713 \pm 0.2217$ (tr = 3.22), which indicates the effectiveness of the use of AST, ALT and alkaline phosphatase for early forecasting the quality of meat.

Key words: young pigs, serum transaminases, physicochemical properties, chemical composition, longest back muscle, variability, correlation

How to Cite

Khalak, V. (2021). Transaminases of serum and their relationship with physicochemical properties and chemical composition of muscle tissue of young pigs large white breed. Proceedings of the 2nd International Scientific and Practical Conference AWCGCC, April 21-22, 2021. Dnipro, 45–47.

CHANGES IN THE BLOOD FATTY ACIDS OF UKRAINIAN HOLSTEINS UNDER HEAT STRESS

R. Mylostyvyi, O. Izhboldina, O. Kalinichenko, M. Vysokos, P. Antonenko

Dnipro State Agrarian and Economic University, Dnipro, Ukraine



mylostyvyi.r.v@dsau.dp.ua

V. Kozyr

Institute of Grain Crops of National Academy of Agrarian Sciences, Dnipro,
Ukraine

V. Sejian

National Institute of Animal Nutrition and Physiology, Bangalore-560030, India

G. Hoffmann

Department of Engineering for Livestock Management, Leibniz Institute for
Agricultural Engineering and Bioeconomy, 14469, Potsdam, Germany

Встановлено, що збільшення співвідношення n-6 / n-3 ПНЖК в сироватці крові в умовах тривалого теплового стресу може свідчити про порушення функції біомембран, що може мати негативні наслідки для організму молочних корів.

Introduction. The role of fatty acids (FAs) in a living organism is extremely diverse. The concentration and composition of FAs vary significantly in different physiological and pathological conditions, and their study in various biological substrates, including blood plasma, can be an important diagnostic tool that allows to detect and improve the treatment of systemic disorders and diseases associated with lipid imbalance. Many researchers report the importance of studying individual FAs as biological markers of metabolic homeostasis and early detection of body pathological conditions.

Material and methods. Two groups of the adult dairy Holstein cows were randomly formed: one group of animals was under heat stress (HS) - HYP (hyperthermia, n = 8) during the hot summer period, the other, control group, CON (control, n = 10) was formed in autumn, in terms of temperature comfort. Free fatty acids in blood serum were determined by chromatographic examination using a hardware-software complex for medical research on the basis of the gas chromatograph "Chromatek-Crystal 5000" (Chromatek, Russia). STATISTICA 10 statistical software package (StatSoft, Inc., Tulsa, OK, USA) was used for statistical data processing. Significance of differences between groups was assessed using the nonparametric Mann-Whitney test. Differences at values of $p < 0,05$ were considered statistically significant.

Research results. A significant increase in the concentration of free fatty acids in the cows serum of HYP group (49%) indicates intense lipolysis in adipose tissue

during heat stress. Despite the increase of saturated fatty acids (SFA) in the serum by 2.3 $\mu\text{g} / \mu\text{l}$, the ratio of unsaturated fatty acids (UFA) / saturated fatty acids (SFA) in the conditions of hyperthermia increased more than 2 times. A significant increase in the ratio of n-6 / n-3 polyunsaturated fatty acids (PUFA) in the cows serum with long-term HS compared with the CON group, may indicate changes in the structure and fluidity of biomembranes, and hence the violation of membrane-dependent functions of cellular and subcellular structures, including what may be associated with the involvement of these and other PUFAs in lipoperoxidation process.

Conclusions. The hot weather caused changes in the composition of FAs in the dairy cows serum. An increase in the total concentration of FAs, as well as a change in the ratio of some classes of FAs may indicate a negative animals energy balance. Increasing the ratio of n-3 / n-6 PUFA can affect not only the welfare of dairy cows, but also the quality of milk and food.

Key words: dairy cows, blood serum, free fatty acids, heat stress

How to Cite

Mylostyvyi, R., Izhboldina, O., Kalinichenko, O., Vysokos, M., Antonenko, P., Kozyr, V., Sejian, V., & Hoffmann, G. (2021). Changes in the blood fatty acids of Ukrainian Holsteins under heat stress. Proceedings of the 2nd International Scientific and Practical Conference AWCGCC, April 21-22, 2021. Dnipro, 47–49.

КЛІТИННИЙ СКЛАД ПАРЕНХІМИ ЛІМФАТИЧНИХ ВУЗЛІВ СВИНІ СВІЙСЬКОЇ

Cellular composition of the parenchyma of pig lymph nodes

О. Гаврилiна, А. Колесник

Дніпровський державний аграрно-економічний університет, м. Дніпро,
Україна
anya.kolesnik92@gmail.com

Somatic and visceral lymph nodes of domestic pigs 10 - 120 days of age were studied. On histological preparations stained with azure II-eosin, the peculiarities of cytoarchitectonic of separate functional zones of lymph node parenchyma (paracortical zone (unit of deep cortex), cortical plateau, lymph nodes, medulla cords) were determined. It was found that each functional area of the body consists of