

animals; by the age of reaching 100 kg live weight, fat thickness at the level of 6-7 thoracic vertebrae and the length of the cooled carcass, they will exceed the minimum elite class requirements by an average of 13,49 %. Significant correlation was established between total protein content in serum, fat thickness at 6-7 thoracic vertebrae ($r = -0,558$), and average weight gain over control fattening ($r = + 0,693$).

Keywords: pigs, serum biochemical parameters, fattening and meat quality, variability, correlation

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CORRELATION BETWEEN MILK PRODUCTIVITY AND IMMUNOBIOLOGICAL BLOOD COUNTS OF HOLSTEIN HEIFERS

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Досліджували зв'язок між продуктивним довголіттям голштинських корів та імунобіологічними показниками крові в умовах промислової технології виробництва молока. Виявлено високу кореляцію між бактерицидною та лізоцимною активністю сироватки крові, вмістом Ig G і Ig M та довічним надоєм, виходом молочного жиру та білка.

Introduction. Decrease in productive longevity of highly productive cows in conditions of industrial dairy complexes causes one more problem which is connected with difficulties of herd timely restoration through its own offspring. Therefore, raising of heifers is very important in both breeding and economic

importance in dairy cattle breeding. To that extent, significant attention is paid to the researchers' early prediction of the cows future milk productivity, even during their postnatal development. Quite often, the subject of such studies is the state of calves growth and development, while insufficient attention is given to animals blood indicators. In the available literature to us, practically there is no information on the relationship between the values of humoral and cellular immunity of calves with their future milk performance. These blood indicators are traditionally used to characterize body's immunobiological reactivity and the health of calves, and extremely rare to predict their future lifelong milk productivity. This is partly due to the difficulties associated with the duration of such studies, since the cow must complete its productive life.

Methods. Our studies are covering a considerable period of time (more than ten years). The model group of newborn calves was formed in an amount of 30 heads (the animals were selected according to the same live weight, sex and breed). Blood was taken at the age of one, three and six months. We respected all the rules of bioethics dealing with animals (Directive 2010/63/EC and Directive 98/58/EC). The calves were weighed at the age of 3, 6, 9, 12, 15 and 18 months, and also before insemination. Lifetime milk productivity of cows was taken into account in the management system of dairy cattle breeding "Orsek" for indicators of milk yield, yield of fat and protein. The parameters of humoral and cellular defense of the body were determined by the methods described in the work (Chumachenko et al. 2005). Immunoglobulin's contents of G and M class we measured by the method of radial immunodiffusion in the gel (Mancini 1965). Biometric data processing (Plohinskij 1969) was carried out using STATISTICA 10.

Results. Achieved results demonstrated the possibility of using immunobiological indicators of calves' blood as markers of the cows future productivity. A reliable positive relationship between bactericidal activity of blood serum of three months aged calves and their lifelong milk productivity, milk fat yield and protein ($r = 0.63-0.69$, $P < 0.05$) was found. The correlation between productive qualities and lysozyme activity of blood serum were less dense ($r = 0.57-0.59$, $P < 0.05$), as well as IgG and IgM ($r = 0.58-0.63$, $P < 0.05$). At the same time, the relationship between values of lifelong milk productivity and the phagocytic activity of neutrophils was positive ($r = 0.31-0.41$), but it was unreliable.

Conclusions. The search for reliable markers for predicting the productive longevity of highly productive cows in early rearing periods is extremely important for making managerial decisions. One-way analysis of variance has showed that the productive longevity of Holstein cows at 21–47% were due to the immunobiological status of the heifers' organism in early postnatal ontogenesis.

Key words: heifers, cow, Holstein breed, blood values, lifelong milk productivity, correlation.