



Federal Science Center
for Animal Husbandry
named after
Academy Member L.K. Ernst



THE INFLUENCE OF TECHNOLOGICAL STRESS ON THE BIOCHEMICAL STATUS OF LAMBS WITH DIFFERENT GENOTYPES

[Vugar Bagirov](#), [Baylar Iolchiev](#), [Natalia Volkova](#), [Anastasia Vetokh](#)*, [Natalia Zinovieva](#)



Introduction

Animal stress is identified as a unique event that elicits a specific behavioral, physiological, neuroendocrine, endocrine, and/or immune response that may be as unique as the stressful event itself (Carroll & Burdick Sanchez 2013). Sheep breeding is accompanied by various technological processes, some of them are stress factors, and one of these factors is the weaning of lambs from mothers. The lambs may have difficulty in adapting to the weaning, because the weaning produces weaning shock in the lambs.

The goal was to study the effect of technological stress on the biochemical status and growth indicators of lambs with different genotypes.

Material and methods

Lambs were divided into three groups: pure-bred Romanov (n=18), Katahdin (n=7) and Argali hybrids (1/4Argali x 3/4Romanov, n=17).

Before weaning and 15 and 30 days after weaning, the lambs live weight was determined and the blood serum biochemistry analysis was conducted.

Statistical analysis of the data was performed using the SPSSv.23.

Results

The effects of genotype and technological stress on body weight and biochemical status are statistically significant ($P \leq 0.001$).

The live weight of the lambs before weaning was: Romanov 15.88 ± 1.20 kg, Katahdin 22.23 ± 0.91 kg, and hybrids 14.32 ± 1.03 kg. The differences between hybrids with Katahdins and Romanovs were 55% and 39.9% ($P \leq 0.05$). The average daily gain (ADG) before weaning in Romanov lambs was 153.0 ± 12.0 g, Katahdins 203.0 ± 8.0 g and hybrids 119 ± 11.0 g.

As a result of lambs weaning from mothers, technological stress was accompanied by an increase urea blood serum level in lambs. In hybrids it averaged 6.61 mmol/L, which is 57% more than before weaning ($P \leq 0.05$). In Katahdin, Romanov and hybrid lambs during the adaptation period was observed an increase the blood cholesterol level by 7.08%, 23% and 18% respectively, and ADG in all groups was decreased and amounted in hybrids 72 ± 5.0 g, in Romanovs 83 ± 5.6 g and in Katahdins 110 ± 4.3 g.

Conclusion. The results of the study showed that the reaction of lambs to technological stress depends on the genotype of the animal, and the adaptation process after weaning is accompanied by a decrease in growth intensity.

Grades						Grades					
Dependent variable	Blood system	Average	Sem	95% confidence interval		Dependent variable	Blood system	Average	Sem	95% confidence interval	
				Bottom line	Upper bound					Bottom line	Upper bound
Cholesterol, mmol / l		2,070 ^a	0,563	0,961	3,179	Glucose, mmol / l	1/4 argali x3/4romanov	2,8	0,187	2,431	3,169
	1/4 argali x3/4romanov	2,405	0,203	2,004	2,806		Kathadinxromanov	2,531	0,085	2,364	2,698
	Kathadinxromanov	2,134	0,092	1,953	2,316		Pure-breed romanov	2,506	0,127	2,255	2,756
	Pure-breed romanov	2,159	0,138	1,887	2,431		1/4 argali x3/4romanov	4,626	0,673	3,301	5,951
						Urea, mmol / l	Kathadinxromanov	4,704	0,304	4,104	5,304
							Pure-breed romanov	4,99	0,456	4,091	5,888

^a Based on a modified marginal average of the population.

Acknowledgments: Supported by the Russian Science Foundation (project №18-16-00079) and the Ministry of Science and Higher Education of Russia (theme №AAAA-A18-118021590132-9)

Contacts: Vetokh Anastasia, e-mail: anastezuya@mail.ru
Volkova Natalia e-mail: natavolkova@inbox.ru