

UCC 619;612.8:636.4

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### ***THE INFLUENCE OF STRESS RESISTANCE AND STRESS SENSITIVE OF BOARS ON THE LEVEL OF CONDITIONED REFLEX ACTIVITIES AND SPERM EFFICIENCY***

*Stress resistance and sensitive of boars influence on their conditioned reflex activities and sperm efficiency. The stress resistant animals have the first conditioned reflexes for copulation earlier than the stress sensitive animals. They also dominated stress sensitive boars by semen volume and sperm concentration, respectively by 42.9-82.2% and 3.4-21.7%.*

**Keywords:** *stress resistance, stress sensitive, reflexes, stuffed animals, sperm efficiency, semen volume, sperm concentration.*

**Formulation of the problem.** Nowadays we revive and build hog-breeding industrial complexes, but only 40-60% of genetic potential productivity of animals is being realized in conditions of intensive technology [1].

The industrial technology of hog-breeding runs contrary to the physiological characteristics of the organism, established over a long evolution.

That's why the problem of various stresses influence on the animals is rather actual for hog-breeding. The long-term breeding of pigs aimed to increase productivity and amount of meat had a negative impact on their adaptive properties to various stressors [1].

It was proved that purposeful breeding and early accustoming of boars to phantom facilitates obtaining sperm at the age of 4-5 months and allows evaluating their semen; it also allows conducting a complex assessment of the boars-sires development and performance at the age of 6 months [3].

**Material and methods of research.** The aim of the work was to research the influence of stress resistance and steadiness of neural processes on the qualitative and quantitative characteristics of boars sperm efficiency of various breeds.

The research was conducted under the conditions of industrial complex, we took boar-sires of such breeds as Large White, Poltava beef, Landrace and Duroc got from the parents of class elite and elite-record.

The stress resistance and stress sensitive of boars was determined by halothane method; the boars were of the age of 45-50 and 60 days.

The 7-8 months boars were trained to copulate with stuffed animals. Sperm was taken once a week, and its volume was determined, activity and concentration of spermatozoa in 1 ml. were also researched.

While the first conditioned reflexes of getting sperm were observed we also researched the animals behavior.

Experimental and digital material was treated by variational statistics. The difference is veritable at \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

**The results of research.** The research analysis has proved that the boars of Landrace and Large White breeds are the most stress sensitive, respectively 40.0 and 36.5% (table 1).

The largest number of stress stable animals (table 1) is among the Landrace breed (70.5%), the smallest number of stress stable animals is among the Large White breed (58.5%).

Table 1

**Boars reaction by halothane method**

Breed	Tested, heads	Reaction		
		positive, %	negative, %	questionable, %
Duroc	27	23.5	70.5	6.0
Poltava beef	20	25.0	62.5	12.5
Landrace	15	40.0	60.0	-
Large White	42	36.5	58.5	6.0

The part of tested boars had doubtful reaction; they are the animals of Duroc, Large White (6.0%) and Poltava beef breed (12.5%).

The second test at the age of 60 days has proved that animals reaction of all breeds has improved; they have better stress resistance. That's why the halothane method should be used at the age of 45-50 days. The process of boars training for sperm getting has proved that conditional sex reflexes formed after unconditional sex reflexes; these conditional sex reflexes should be maintained during the period of operation. The experimental results have proved that stress resistant animals need fewer attempts with stuffed animal for getting first copulation and ejaculation in artificial vagina (table 2).

Table 2

**The formation of conditioned reflexes, ( $M \pm m$ ),  $n=20$**

Breed	Group of animals	Reflex act	
		number of attempts for copulation	lim
Duroc	Stress resistant	3.17±0.43	2-7
	Stress sensitive	4.21±0.27	3-8
Poltava beef	Stress resistant	2.31±0.35*	1-5
	Stress sensitive	4.05±0.11*	2-6
Landrace	Stress resistant	2.21±0.24*	1-6
	Stress sensitive	3.52±0.32*	2-12
Large White	Stress resistant	2.10±0.15**	1-7
	Stress sensitive	4.21±0.46**	3-14

The first conditioned reflexes (table 2) appear at the first-seven combination of conditioned and unconditioned stimulus; the stress resistant boars need fewer combinations than stress sensitive boars by 32.8-100.2%.

Stress sensitive animals have lower characteristics ( $P < 0.05$  -  $P < 0.01$ ) of conditioned reflex activity, it is characterized by slow formation of conditioned reflexes of the first copulation with phantom.

It was proved that stress resistant animals adapt more quicker to new conditions, allowed near to his person, the first reflexes occur without complications.

Stress sensitive animals have long starter reflex, slowly get used to new conditions, restless react to strangers and talks. Boars are gradually accustomed to the arena in monotonous conditions.

There are cowardly boars with a distinct passive-defensive reflex among animals positive to stress. They are characterized by posture of alertness, front legs are extended, head turned towards external stimulus. They have reduced efficiency, undeveloped processes of excitation and inhibition; that's why there is often external inhibition. It should be mentioned that two stress sensitive boars were not taught to copulate with stuffed animal.

As a result of the research it was proved that semen volume and sperm concentration depends on stress sensitive of boars-sires (table 3).

Table 3

**Sperm efficiency of boars from different breeds and with various stress resistance**  
( $M \pm m$ ),  $n=18$

Breed	Stress resistant		Stress sensitive		Stress resistant $\pm$ stress sensitive, %	
	Semen volume, ml.	Concentration of sperm, billion / ml	Semen volume, ml	Concentration of sperm, billion / ml	Semen volume, ml	Concentration of sperm, billion / ml
Duroc	198.2 $\pm$ 9.87*	0.30 $\pm$ 0.03	108.8 $\pm$ 8.4*	0.29 $\pm$ 0.02	182.2	103.4
Poltava beef	100.0 $\pm$ 4.35*	0.26 $\pm$ 0.04	61.0 $\pm$ 4.2*	0.25 $\pm$ 0.03	163.9	104.0
Landrace	188.1 $\pm$ 21.29*	0.28 $\pm$ 0.01	123.3 $\pm$ 26.4*	0.23 $\pm$ 0.04	152.6	121.7
Large White	222.1 $\pm$ 10.1*	0.23 $\pm$ 0.02	155.4 $\pm$ 18.3*	0.22 $\pm$ 0.04	142.9	104.5

The stress stable animals of all breeds prevailed stress sensitive counterparts by the semen volume and sperm concentration respectively by 42.9-82.2 and 3.4-21.7% during the first two months of sperm getting (table 3).

The boars of the Duroc breed had the largest difference of the semen volume; it was 82.2%; the difference is veritable at ( $P < 0.05$ ).

The stress resistant boars of all breeds had a tendency to a higher concentration of sperm in 1 ml of semen 3.4 - 21.7%.

**Conclusions.** The largest number of stress sensitive animals is among the Landrace breed and the Large White breed. The stress resistant animals have the first conditioned reflexes for copulation earlier than the stress sensitive animals. They also dominated stress sensitive boars by semen volume and sperm concentration, respectively by 42.9-82.2 % and 3.4-21.7%.

**Prospects for further research.** In the future it is advisable to conduct a study of the technological impact of stress on the quantity and quality of boar sperm depending on the breed.

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**УДК 619;612.8:636.4**

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**ВПЛИВ СТРЕСОСТІЙКІСТІ І СТРЕСОЧУТЛИВІСТІ КНУРІВ НА РІВЕНЬ УМОВНО-РЕФЛЕКТОРНОЇ ДІЯЛЬНОСТІ ТА ПОКАЗНИКИ СПЕРМОПРОДУКТИВНОСТІ**

Стресостійкість і стресочутливість кнурів-плідників впливає на їх умовно-рефлекторну діяльність та показники спермопродуктивності. У стресостійких тварин, в порівняно із стресочутливими, перші умовні рефлекси садки на чучело виникають швидше. Вони переважали стресочутливих кнурів за об'ємом еякуляту та концентрацією сперматозоїдів, відповідно на 42,9-82,2 та 3,4-21,7%.

**Ключові слова:** стресостійкість, стресочутливість, умовні рефлекси, чучело, спермопродуктивність, об'єм сперми, концентрація сперматозоїдів.

**УДК 619;612.8:636.4**

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**ВЛИЯНИЕ СТРЕССОСТОЙКОСТИ И СТРЕССОЧУСТВИТЕЛЬНОСТИ ХРЯКОВ НА УРОВЕНЬ УСЛОВНО-РЕФЛЕКТОРНОЙ ДЕЯТЕЛЬНОСТИ И ПОКАЗАТЕЛИ СПЕРМОПРОДУКТИВНОСТИ**

Стрессоустойчивость и стрессочувствительность хряков влияет на уровень их условно-рефлекторной деятельности и показатели спермопродуктивности. В стрессоустойчивых животных, по сравнению из стрессочувствительными хряками, условный рефлекс садки на чучело возникал быстрее. Они превосходили стрессочувствительных хряков за объемом спермы и концентрацией сперматозоидов, соответственно, на 42,9-82,2 и 3,4-21,7%.

**Ключевые слова:** стрессоустойчивость, стрессочувствительность, условные рефлексы, чучело, спермопродуктивность, объем спермы, концентрация сперматозоидов.

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