

## CODEN [USA]: IAJPBB

ISSN: 2349-7750

# INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2615295

Available online at: http://www.iajps.com

**Research Article** 

# MEAT PRODUCTIVITY OF TURKEYS BY USING BIOGENIC STIMULANTS

Vladimir Pogodaev<sup>1</sup>, Vyacheslav Shcherbatov<sup>2</sup>, Vasily Slepuhin<sup>3</sup>, Tatyana Pakhomova<sup>4</sup>, Igor Shcherbatov<sup>5</sup>

<sup>1</sup>North Caucasus Federal Agricultural Research Center, Nikonov str. 49, Mikhailovsk 356241, Russia, <sup>2</sup>Kuban State Agrarian University named after I.T. Trubilin, Kalinina str. 13, Krasnodar 350044, Russia, <sup>3</sup>Breeding poultry factory «Rus' SVS», Rossiyskaya str., 1, Korenovsk, Russia, <sup>4</sup>Open joint stock company breeding poultry factory «Labinskiy», Kommunisticheskaya str., 40, Prokhladny village, Labinsk, Russia, <sup>5</sup>Maykop State Technological University, Pervomayskaya str., 191, Maikop 385000, Republic of Advgea, Russia.

Article Received: January 2019	Accepted: February 2019	Published: March 2019
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#### Abstract:

Currently, young farm animals suffer from a variety of immunodeficiencies, which cause great economic damage. The aim of the work was to study the effectiveness of the action of new biogenic stimulants from the larvae of the drone brood of the bee "SITR" (patent for invention No. 2395289) and from adult individuals of the drones "ST" (patent for the invention No. 2471493) for meat qualities and morphological composition of male and female turkeys. It was established that females and males of groups II and III, who received injections of biogenic stimulants, were distinguished by higher slaughter rates. 92.31% of carcasses of females of the I control group and 100% of carcasses of females II and III of the experimental groups were assigned to the first class, which is 7.69 percent more absolute compared to the control. Females and males of II and III experimental groups reliably exceeded the analogs of the control group in terms of meat qualities. Anatomical cutting of carcasses shows that females and males stimulated with biogenic preparations significantly exceeded the control group in terms of the thoracic part, back, thigh, tibia, wings, and neck skin. On average, the carcasses of females and males II and III of the experimental group contained more pulp — by 944 and 689 g, muscle tissue — by 821.5 and 586.0 g, and bones — by 181 and 121 g. Thus, females and male turkeys SITR and ST stimulated with biogenic preparations possess high slaughter and meat qualities have the best morphological composition of the carcass, slaughter yield, meat qualities.

### **Corresponding author:**

#### Vladimir Pogodaev,

North Caucasus Federal Agricultural Research Center, Nikonov str. 49, Mikhailovsk 356241, Russia.



Please cite this article in press Vladimir Pogodaev et al., Meat Productivity Of Turkeys By Using Biogenic Stimulants., Indo Am. J. P. Sci, 2019; 06(03).

#### **INTRODUCTION:**

Despite the measures used, bird diseases constantly flare up in different parts of the world and incur serious losses for poultry farmers. Widespread, especially among young farm animals, received a variety of immunodeficiencies, causing enormous economic damage caused by them. Therefore, for many decades, a prominent place in the research of scientists is the development of growth biostimulants and the protective properties of the organism [1].

It is established that the use of various biologically active substances can correct metabolic processes in the body of animals and increase their productivity. Animal immunodeficiency states can be prevented by biostimulants [2]. The mechanism of action of known biostimulants is diverse. Of greatest interest are tissue preparations, which have proven to be the most effective and universal immune stimulating substances. Their use activates the metabolism, increases the natural resistance, growth energy of animals, feed conversion and preservation, which positively affects the profitability of production [3, 4, 5, 6].

A group of scientists have developed methods for the production of new biogenic stimulants from the larvae of drone brood of bees "SITR" (patent for invention No. 2395289) [7] and from adult individuals of drones "ST" (patent for invention No. 2471493) [8].

The purpose of this work was to study the effectiveness of the action of the SITR and ST biogenic stimulants on the meat quality and morphological composition of male and female turkeys.

#### **MATERIAL AND METHODS:**

Scientific and economic experience carried out on the farm "Indeyka Kavkaza" Georgievsky district of the Stavropol Territory.

For the experiment, 90 daily turkey poults of white broad-chested breed were selected, which were divided into three groups of thirty animals each. The poults of the first control group received injections of a physiological solution, and the II and III experimental groups, respectively, of the biogenic stimulators SITR and ST, three times at the age of 1, 7, and 14 days at a dose of 0.1 ml per 50g body

#### weight.

From daily to 91-day life, youngsters were grown on litter, without separation by sex. At 13 weeks of age, youngsters were divided by sex and subsequently grown separately.

Turkeys of all sex and age groups were fed with a combined feed prepared according to the recommendations of VNITIP [9].

To account for the growth of turkeys individually weighed at the age of 1,56,91,112,140 days. To study meat productivity, experimental turkeys were slaughtered at 140 days of age. The quality assessment of turkey poults was carried out in accordance with the requirements of the state standard GOST R53458–2009 - "Turkey meat (carcasses and their parts)" [10].

Cutting and deboning gutted carcasses of turkeys under farm conditions. For this purpose, the wings were distinguished along the humeral joint, the thigh - along the hip joint, the thoracic region - at the junction of the thoracic and vertebral ribs (coracoid line). If necessary, the wing was divided into three parts, and the legs - into two parts along the joints, divided along lines, perpendicular to the axis of the corresponding bones.

The parts were rolled by hand, followed by stripping the bones, then they were weighed and the content of muscle tissue, skin, and bones was determined.

#### **RESULTS AND DISCUSSION:**

Our research has established that the carcasses of turkey poults in the experimental groups were well bloodless, clean, free of foreign smells and fecal contaminants, without visible blood clots, without remnants of the intestine and cloaca of the trachea, esophagus, and spots from spilled bile. 92.31% of carcasses of females of the I control group and 100% of carcasses of females II and III of the experimental groups were assigned to the first class, which is 7.69 percent more absolute compared to the control.

Carcasses of males of all experimental groups corresponded to the first class. The muscles were well developed, the chest was round, the keel of the chest bone did not stand out, there were deposits of fat on the chest and abdomen.

Females of group II and group III, who received injections of biogenic stimulants, differed in higher slaughter rates (Table 1).

Indicator	Group						
	Ι	II	III				
Females							
Number of slaughter females, heads	13	15	14				
Pre-slaughter weight, kg	6,24±0,10	7,46±0,07	7,24±0,06				
Gutted carcass weight, kg	4,66±0,11	5,67±0,10	5,48±0,15				
Slaughter yield,%	74,73	75,98	75,69				
Males							
Number of slaughter males, heads	15	15	16				
Pre-slaughter weight, kg	8,42±0,09	9,92±0,09	9,40±0,06				
Gutted carcass weight, kg	6,41±0,13	7,65±0,14	7,21±0,13				
Slaughter yield,%	76,11	77,08	76,70				

Table 1: Slaughter qualities of experimental turkeys

Thus, in the pre-slaughter mass, females II and III of the experimental groups exceeded the counterparts I in the control group by 1.22 and 1.00 kg (B> 0.999), in the mass of the gutted carcass by 1.01 and 0.82 kg (B> 0.999) output at 1.25 and 0.96 absolute percent.

Significant differences in meat qualities were also found between the males of the experimental groups. Males of the II and III groups compared with the control group analogues had a greater pre-slaughter weight by 1.50 kg (17.81%) and 0.98 kg (11.64%), (B> 0.999), the gutted carcass weight by 1.24 kg (19.34%) (B> 0.999). And 0.80 kg (12.48%), (B> 0.99). Slaughter yield was higher, respectively, by 0.97 and 0.59 absolute percents.

For a more complete and objective assessment of the meat qualities of turkeys, we conducted anatomical cutting and complete deboning of 10 carcasses (5 females and 5 males) from each group.

Carried out anatomical cutting of carcasses indicates that the specific weight in them in the first place is the chest part, then the back, thigh, shin and wing (Table 2, Figures 1, 2). The females of group II and group III, stimulated by the biogenic preparations SITR and ST, were distinguished by a high absolute content of all parts of the carcass. Their breast mass is greater by 0.42 (B> 0.99) and 0.33 (B> 0.95) kg, back - by 0.06 and 0.05 kg, thighs by 0.24 (B> 0.99) and 0.20 (B> 0.99) kg, tibia by 0.11 (B> 0.95) and 0.09 kg, wings by 0.14 (B> 0.95) and 0.12 kg, skin on the neck - by 0.04 (B> 0.99) and 0.03 kg (B> 0.99).

The turkeys of the II and III experimental groups surpassed the analogues of the I control group in relative content in carcasses of the thoracic region by 1.22 and 0.83 abs. %, femoral - by 1.40 and 1.22 abs. %, wings - by 0.33 and 0.39 abs.%, neck skin - by 0.32 and 0.22 abs.% and inferior in relative backrest content - by 2.72 and 2.26 abs. % and the legs - at 0.55 and 0.45 abs. %

About the same pattern was observed in males. In the carcass of males, the chest has the largest share - from 36.35 to 39.35%, then the back - from 18.52 to 21.24%, the thigh from 15.66 to 16.23%, the lower leg - from 12, 34 to 12.80%, wings - from 10.85 to 11.54%, neck skin – from 2.48 to 2.65%.

Indicator	Group					
	Ι		II		III	
	kg	%	kg	%	kg	%
Females						
Pre-slaughter mass	6,24±0,10	100,0	7,46±0,07	100,0	7,24±0,06	100,0
Mass of gutted carcass	4,66±0,11	100,0	5,67±0,10	100,0	5,48±0,15	100,0
including: chest	1,62±0,08	34,76	2,04±0,07	35,98	1,95±0,08	35,59
back	0,99±0,00	21,24	1,05±0,03	18,52	1,04±0,02	18,98
hip	0,74±0,02	15,88	0,98±0,04	17,28	0,94±0,04	17,15
shin	0,65±0,02	13,95	0,76±0,03	13,40	0,74±0,04	13,50
wing	0,56±0,03	12,02	0,70±0,04	12,35	0,68±0,04	12,41
neck skin	0,10±0,00	2,15	0,14±0,01	2,47	0,13±0,01	2,37

Table 2: Ratio of different parts of turkey experimental carcass

Males						
Pre-slaughter mass	8,42±0,09	100,0	9,92±0,09	100,0	9,40±0,06	100,0
Mass of gutted carcass	6,41±0,13	100,0	7,65±0,14	100,0	7,21±0,13	100,0
including: chest	2,33±0,10	36,35	3,01±0,13	39,35	2,79±0,10	38,70
back	1,34±0,03	20,90	1,43±0,03	18,69	1,36±0,04	18,86
hip	1,01±0,03	15,76	1,23±0,03	16,08	1,17±0,04	16,23
shin	0,82±0,03	12,80	0,96±0,04	12,55	0,89±0,03	12,34
wing	0,74±0,03	11,54	0,83±0,04	10,85	0,82±0,03	11,37
neck skin	0,17±0,00	2,65	0,19±0,00	2,48	0,18±0,00	2,50

Turkeys of the II and III experimental groups exceeded the control group by the mass of the chest part by 0.68 (B> 0.99) and 0.46 (B> 0.95) kg, the backs by 0.09 and 0.02 kg, the thighs by 0.22 (B> 0.99) and 0.16 (B> 0.95) kg, shank - by 0.14 (B> 0.95) and 0.07 kg, wings by 0.09 and 0.08 kg, neck skin - by 0.02 (B> 0.99) and 0.01 kg. The relative content of the different parts in the carcass was as follows: the males II and III experienced exceeded the analogues of the control group in the chest part by 3.00 and 2.35 abs.%, The femoral - by 0.32 and 0.47 abs.% And were inferior in the dorsal part. by 2.21 and 2.04 abs.%, shins - by 0.25 and 0.46 abs.%, wings - by 0.69 and 0.17 abs.%



■ Chest ■ Back ■ Hip ■ Shin ■ Wing ■ Neck skin Figure 2: Ratio of different parts of a 140-day-old turkey experimental carcass

The quality indicators of carcasses testify to the great superiority of young turkeys, stimulated by the biogenic preparations SITR and ST, (Table 3). Thus, turkeys II and III of the experimental group exceeded the analogs of the control group in absolute mass of pulp in carcass, respectively, by 814 and 665 g (24.28 and 19.84%), muscles - by 714 and 564 g (26.89 and 21.24%), bones - by 196 and 135 g (14.98 and

11.85%). The yield of pulp in the carcasses of these groups was 73.47 and 73.30 abs.%, And the yield of muscle tissue - 59.42 and 58.74 abs.%, Which is more than in the control group, respectively, by 1.54 and 1.37 abs. %, and 2.45 and 1.77abs.%. The relative yield of bones in the experimental groups was lower - by 1.54 and 1.37abs.%.

Indicator	Group							
	Ι		II		III			
	g	%	g	%	g	%		
Females								
Mass of gutted carcass	4660	100,00	5670	100,00	5480	100,00		
Mass of pulp	3352	71,93	4166	73,47	4017	73,30		
Bone mass	1308	28,07	1504	26,53	1463	26,70		
Skin mass	697	14,96	797	14,05	798	14,56		
Muscle mass	2655	56,97	3369	59,42	3219	58,74		
Meat bone index	2,56	_	2,77	_	2,75	-		
Muscle-bone index	2,03	_	2,24	_	2,20	-		
Males								
Mass of gutted carcass	6410	100,00	7650	100,00	7210	100,00		
Mass of pulp	4679	73,00	5753	75,20	5392	74,79		
Bone mass	1731	27,00	1897	24,80	1818	25,22		
Skin mass	927	14,46	1072	14,01	1032	14,31		
Muscle mass	3752	58,54	4681	61,19	4360	60,47		
Meat bone index	2,70	_	3,03	_	2,97	_		
Muscle-bone index	2,17	_	2,47	_	2,40	_		
On average, females and males								
Mass of gutted carcass	5535	100,00	6660	100,00	6345	100,00		
Mass of pulp	4015,5	72,55	4959,5	74,47	4704,5	74,14		
Bone mass	1519,5	27,45	1700,5	25,53	1640,5	25,86		
Skin mass	812,0	14,67	934,5	14,03	915,0	14,42		
Muscle mass	3203,5	57,88	4025,0	60,44	3789,5	59,72		
Meat bone index	2,64	_	2,92	-	2,87	-		
Muscle-bone index	2,11	_	2,37	-	2,31	-		

Table 3: Indicators of the quality of the carcasses of experimental turkeys

The calculation of the meat-bone index showed that in females II and III experienced group it was higher compared to the control group by 8.20 and 7.42%, and the muscle-bone index, respectively, by 10.34 and 8.37%.

A similar pattern was observed in the males.

On average, the carcasses of females and males II and III of the experimental group contained more pulp - by 944 and 689 g (23.51 and 17.16%), muscle tissue - by 821.5 and 586.0 g (25.64 and 18, 29%), of bones— by 181 and 121 g (11.91 and 7.99%). The relative yield of muscle tissue in their carcasses was more by 2.56 and 1.84 abs.%, Pulp – by 1.92 and 1.59 abs.%, Meat and bone index - by 10.61 and 8.71%, and muscular - bone index - by 12.32 and 9.48%, than in the control group's peers.

#### **CONCLUSION:**

On the basis of the conducted studies, it can be concluded that females and males stimulated with the SITR and ST biogenic preparations have high slaughter and meat qualities that have the best morphological composition of the carcass, high bone and bone and muscle bone indexes. The best results are obtained when using the SITR bee brood stimulator.

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