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VETERINARY AND SANITARY ESTIMATION OF SWINE SLAUGHTER PRODUCTS USING BI-DEZ™ DISINFECTANT

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The article presents the results of investigation of swine meat quality. According to the organoleptic, biochemical and sanitary parameters swine meat in the experimental groups did not differ from meat sample of the control animals. Meat and rendered fat, received from swine, raised with the use Bi-dez^{mm} as a disinfectant, can be stored well during 8 days at the temperature 0 +4°.

Key words: swine, Bi-dez^{mm}

Introduction. The main parameters of meat quality, that are of interest to the consumer, are meat colour, taste, flavour, succulence and softness. Under current conditions meat quality should be fully estimated including its quality and safety. Only such integrated assessment can guarantee sanitary quality of meat.

Meat sanitary safety and quality depend on many factors, i.e. place of animal breeding, forage quality, availability of veterinary medicines, sanitary state of equipment at the enterprises [1, 2, 3]. Microorganisms represent the greatest danger for human health. That's why the promising direction is the application of new efficient multicomponent disinfectant medicines at the enterprise, which prevent the spread of microorganisms, resistant to them, but which are also safe and nontoxic for people and animals.

Bi-dez™ has a bactericide and sporocide effect upon the majority of gram-positive and gram-negative bacteria; it has a virucidal, antiprotozoal effect on eimeria, and it has also a fungicidal and deodorized effect. The medicine is used for disinfection (or combination of washing and disinfection), decontamination and disinvasion of various objects, which are subject to veterinary supervision [4, 5].

Aim statement. The aim of our research is the analysis of swine meat with the use of Bi-dez™ medicine for the purpose of pigsty disinfection. Swine meat is the object of our research.

Research methods. Disinfection was held in the experimental pigsty with Bi-dez™ medicine 1,0% (100 ml на 10 l of water), and in the control one – with caustic soda 8 % solution.

Animals were slaughtered having reached 100 kg of live weight and samples were taken for organoleptic, biochemical and sanitary expertise. Organoleptic meat evaluation (avascularization, colour, consistency, flavour, sample taken after boiling of fresh and chilled meat) was held in 24 hours and 8 days of its storage in the refrigerated chamber ($0^{\circ} \dots \pm 4^{\circ} \text{C}$) in the basic research laboratory at the chair of veterinary and sanitary expertise, microbiology, zoohygiene and livestock products safety and quality.

Meat chemical composition and calorie content were determined using generally accepted methods (Ostapchuk P. P., 1979) in the meat samples from oblong back muscle, taken in the area of 10-11th intercoastal space; water-absorbing capacity was determined using Grau's method modified by V. P. Volovynska and S. A. Merkulova [6], comparative biological value of swine meat (CBV) was determined using method of P. V. Mykytiuk with ciliated infusorium *Tetrahymenapyriformis* (laboratory strain WH₁₄) as a biological object [7].

Carcass yield was calculated. Morphological composition of carcass was examined during selective drying, defining the percentage ratio of meat, fat and bones.

Research results. Meat was studied when it was fresh (in 24 hours after slaughter) and in 8 days after its storage in the refrigerated chamber ($0^{\circ} \dots 4^{\circ} \text{C}$), because animal carcasses are mainly refrigerated and frozen and it provides their long storage and almost does not reduce their technological and nutritional qualities.

Analysis of meat biological parameters helps determine its quality and technological aptitude for the following processing.

Meat biological value is the main quality coefficient that enables to determine its nutritional aptitude. Research results with the analysis of the biochemical parameters are given in the table 1.

Received data (table 1) prove that at the beginning of the experiment mass of the control and experimental animals was equal, before-slaughter mass of the experimental swine was 7.1 kg bigger than mass of the control ones. Therefore, mass of new-slaughtered carcass was also bigger in the experimental group (+ 4,8 kg), but the percent of the yield in the experimental group was only 1,4 % higher ($p \geq 0,5$).

Table 1

**Interior Peculiarities of Swine Development with the Usage of
Bi-Dez™ medicine**

Unit name	Control group, n=15	Experimental group, n=15
Animal weight at the age of 2 months, kg	15,90±0,06	15,90±0,04
Before-slaughter mass, kg	101,30±2,52	108,10±2,91*
Mass of new-slaughtered carcass, kg	59,52±2,34	61,55±4,12
% of yield	56,37±1,42	59,16±3,02
Mass of, kg		
heart;	0,328±0,032	0,330±0,028
lungs and trachea;	0,586±0,020	0,630±0,091
liver;	1,367±1,060	1,450±1,450
spleen;	0,130±0,010	0,126±0,013
kidneys;	0,229±0,023	0,221±0,021
inner fat;	0,618±0,072	0,589±0,077
Muscular tissue, kg	40,43±1,65	44,06±3,25*
Fat, kg	7,67 ±0,36	9,70±0,53
Bones, kg	9,29±1,00	9,36±1,56

Note. *P<0,05

There was not any considerable difference in the mass of heart, lungs and trachea, and kidneys. Liver mass of the animals, who took immune-modulating drugs, was 74 kg or 5,46 % higher, and spleen mass was 55,0 gr or 30,3 % lower than in the control group. Similar tendency was typical for the internal fat mass as well. Thus, the internal fat mass of the experimental animals was 29,0 gr or 3,4 % smaller .

Analysis of the muscular tissue yield showed that the experimental group had + 3.0 kg or 7,4 %, fat: + 1,75 kg (22,3 %), bones: + 0,05 kg or 0,5 % (p<0,5). These indices prove that the development of the internal organs and tissues of the experimental swine is proportional, without anomalies.

Swine meat was studied according to the certain biochemical parameters, in particular: actual acidity (pH), reaction to the peroxidase and with 5 % solution of copper sulphate, amino-amoniacal nitrogen, water-absorbing capacity, comparative biological value. The results of the biochemical analysis are given in the table 2.

Table 2

Biochemical Parameters and Comparative Biological Value after Use of Bi-Dez™, n=6

Parameters	Control	Experiment
actual acidity (pH) in: 24 hours;		
	5,61±0,02	5,61±0,04
8 days	6,06±0,25	6,07±0,13
Reaction to the peroxidase in:		
24 hours	6+	7+
8 days	6+	5-2±
Reaction with 5 % solution of copper sulphate in : 24 hours	–	7–
8 days	5–	5– 2±
Amino-amoniacal nitrogen (mgr),		
In: 24 hours	1,18±0,05	1,18±0,04
8 days	1,27±0,06	1,27±0,09
Water-absorbing capacity, (%), in:		
24 hours	61,70±1,22	61,81±1,27
8 days	57,36 ±1,42	57,45±1,50
Meat biological value (%)		
In 24 hours	100,00±1,04	100,50 ±1,08

Note. + – positive reaction; – negative reaction

Evaluation of swine meat biochemical parameters showed that there were no difference between the groups in the pH, reactions to the peroxidase, with 5 % solution of copper sulphate, amino-amoniacal nitrogen, held in 24 hours and on the 8th day of storage. Moreover, pretty high water-retaining capacity of all swine meat samples proves that it has good technological and cooking characteristics.

Experiments for defining comparative biological value (CBV) of swine meat were run with live biological objects (infusorium *Tetrahymena pyriformis*), they proved high biological value of swine meat received from the animals of the experimental group (100,5 %).

It should be mentioned that meat samples taken from the animals of the experimental group stored well during 8 days in the refrigerated chamber (t °C 0 ... +4°C). Data, given in the table 2, prove that according to the main physicochemical parameters fat from the carcasses of the experimental and control animals did not differ much in the fresh state as well as after 8 days of storage.

And according to the acid value all samples are of extra quality, it proves that fat of both groups of swine has high food qualities and can be stored well.

Subcutis (fat) was examined when it was rendered in a day and in 8 days after its storage at the temperature 0...+4°C (table 3).

Table 3

Physicochemical Parameters of Swine Rendered Fat after Use of Bi-Dez™, n=15

Parameters	Control group	Experimental group
Humidity (%) in: 24 hours	0,240±0,013	0,240±0,015
8 days	0,258±0,014	0,263±0,016
Temperature of rendering (°C) in: 24 hours	35,75±0,27	35,80±0,30
8 days	37,18±0,13	37,19±0,14
Fat acid value in: 8 days	1,165±0,017	1,163±0,015

According to the organoleptic parameters (colour, smell, consistency, transparency) control and experimental samples did not differ.

Thus, according to the organoleptic, biochemical and sanitary parameters swine meat, received from the animals of the experimental groups, did not differ from the meat samples of the control animals. Rendered fat, received from swine of the experimental and control groups, was of extra quality according to the main physicochemical parameters. Meat and rendered fat, received from swine, raised with the use of Bi-dez™ as a disinfectant, can be stored well during 8 days at the temperature 0 +4°.

Conclusions. The use of Bi-dez™ as a disinfectant at the pig farms does not have any negative influence on the quality of the produce. The promising further research is the investigation of the influence of the use of Bi-dez™ on other kinds of animals.

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**ВЕТЕРИНАРНО-САНИТАРНА ОЦІНКА ПРОДУКТІВ ЗАБОЮ СВИНЕЙ ЗА
ВИКОРИСТАННЯ ДЕЗИНФЕКТАНТУ БІ-ДЕЗ™**

Шкромада О.І.

У статті наведено результати досліджень якості м'яса свинини. За органолептичними, біохімічними та санітарними показниками м'ясо свиней дослідних груп не відрізнялось від проби м'яса контрольних тварин. М'ясо і топлений жир, отримані від свиней, при вирощуванні яких використовували в якості дезінфектанту Бі-дез™ здатні добре зберігатися протягом 8 діб при температурі 0 +4°.

Ключові слова: свині, Бі-дез™

**ВЕТЕРИНАРНО-САНИТАРНАЯ ОЦЕНКА ПРОДУКТОВ ЗАБОЯ СВИНЕЙ ПРИ
ИСПОЛЬЗОВАНИИ ДЕЗИНФЕКТАНТА БИ-ДЕЗ™. ШКРОМАДА О.И.**

В статье приведены результаты исследований качества мяса свинины. По органолептическим, биохимическим и санитарным показателям мясо свиней опытных групп не отличалось от проб мяса контрольных животных. Мясо и топленный шпик, полученные от свиней, при выращивании которых использовали в качестве дезинфектанта Би-дез™ способны хорошо сохраняться на протяжении 8 суток при температуре 0 +4°.

Ключевые слова: свиньи, Би-дез™