RESULTS ON THE EVOLUTION OF BUILDINGS CONTAMINATION GROWTH BROILERS

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Abstract

The objective of this work was to determine the evolution of contamination in the halls of broiler chicken growth, given its implication on survival.

The degree of contamination was assessed in terms of microbiological parameters, determined by the Surface: the genus Staphylococcus bacteria, coliform, bacteria from the Enterobacteriaceae family, total plate count, total fungi.

Samples were taken from several points of the hall, the first time at the age of 9 days chickens, then 21 days and 35 days later.

They performed laboratory analyzes specific in accordance with the methods in operation which is performed in specialized laboratories, strictly respecting labor standards.

The data obtained revealed that the highest degree of contamination was performed at 35 days. At the age of 9 days 3% of samples were positive for target drinkers, and 35 days were 36 % positive samples; objective feeders, 2% of samples were positive at 9 days and 35 days were 27 % positive samples; objective feed hopper, 9 days was 3 % positive samples, while at 35 days the percentage of positive samples reached 14 %; for hall walls objective, there were 2% positive samples at 9 days and 15 % of positive samples at the age of 35 days.

The conclusion of our research was that the degree of contamination of warehouse populated with old broiler chickens significantly increase the advance in their age, all parameters analyzed microbiological having higher values towards the end of growth.

Key words: Broiler chicken, decontamination techniques, decontaminant, analyzed parameters

INTRODUCTION

Poultry meat is an important source of coverage of human needs in animal protein, with a high biological value.

For this reason it is necessary to know the factors that influence the production of poultry meat.

The strategy for controlling hazards in poultry should include: best practices on farm animal production; slaughter of animals disease-free; carcass processing plants properly designed and maintained in sanitary conditions and hygiene, use of intervention and remediation strategies to reduce microbial levels when necessary; compliance system of hazard analysis critical control point - HACCP [4].

Yields large poultry can only be obtained in compliance breeding technologies appropriate to each species of bird in the hand and eliminating as much as possible factors that may adversely affect both the health of the birds and hence the yields achieved (conditions unsuitable microclimate, viral, bacterial or fungal, etc.).

It is necessary that each firm to set up a biosecurity program in order to limit or even cancel the introduction of infectious and parasitic agents in poultry [6].

An important factor in the process of growth of broiler chickens is the decontamination; this ensures the etiologic agents in the environment, thus reducing the risk of animal disease, so it is considered a general measure of prevention.

Shall be strictly observed fallowing, which lasts four weeks and involving compliance with all sanitation work performed in an order well established [5].

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Choosing effective decontaminant, use appropriate working concentration and respect for optimum contact time is central to achieving appropriate decontamination [1].

In the atmosphere, there is always a varied microbial flora, whose number varies depending on the place and time of harvest, with higher values near the ground than the height [3].

The application of ultraviolet (UV) and pulsed UV light for food has drawn attention in recent years as a potential alternative to chemical and thermal disinfection methods [2].

MATERIAL AND METHOD

To determine the evolution of contamination on surfaces in the house growing broiler chicken, samples were taken periodically throughout the growth cycle of chickens at different ages, respectively 9, 21 and 35 days.

After harvesting, the samples were analyzed in the laboratory as follows: samples taken from the buffers sanitation areas have been investigated for the identification of bacteria of the genus Staphylococcus (according to EN 6888-3 IS: 2003.Microbiologia food and feed. The method for counting horizontal coagulase positive staphylococci); identification of coliforms (ISO 4832 / 2009.Microbiologia food and feed. Horizontal method for the enumeration of coliforms); identify bacteria from the Enterobacteriaceae family (according to ISO 21528-2 SR: 2007. Microbiology of food and animal feeding stuffs. Horizontal method for the detection and enumeration of Enterobacteriaceae); determining the total number of germs (according to EN ISO 4833/2003. Microbiology of food and animal feeding stuffs. Horizontal method for the enumeration of microorganisms); determining the total fungi (according to ISO 21527-1 SR: 2009.Microbiologia food and feed. Horizontal method for the enumeration of yeasts and molds).

Laboratory analyzes were performed according to methods work force that is performed in specialized laboratories, following the recommendations of the working standards.

RESULTS AND DISCUSSIONS

The first parameter examined was the bacteria of the genus Staphylococcus; these bacteria are seeded in a particular environment for staphylococci, Baird Parker medium (Figure 1).

Fig. 1 - Agar Baird Parker / gray colonies with black halo Staphylococcus spp.

The results for samples analyzed in order to identify bacteria of the genus Staphylococcus spp. (Table 1) as a percentage revealed that :

the age of 9 months: 3% of samples were positive for target drinkers, 2% positive samples for objective feeders, 3% positive samples for feed hopper 2% target samples positive for objective walled hall; at 21 days of age: 11% of samples were positive for target drinkers, 9% samples positive for objective feeders, 6% positive samples for feed hopper 4% target samples positive for objective walled hall; at 35 days of age: 36% of samples were positive for target drinkers, 27% for target feeders positive samples, 14% positive samples for feed hopper target 15% positive samples for objective hall walls.

Table 1 Identification of the presence of bacteria of the genus *Staphylococcus*

Place harvest	Nr. samples collected	9 days		21 days		35 days	
		Negative	Positive	Negative	Positive	Negative	Positive
Nipple line	60	57	3	49	11	24	36
feeding line	50	48	2	41	9	23	27
feed hopper	50	47	3	44	6	36	14
walls halls	20	18	2	16	4	5	15
Total samples / hall	180	170	10	150	30	88	92
%	100%	94%	6%	83%	17%	49%	51%

The second parameter was analyzed detection of coliforms; for this parameter, the culture medium used was X.L.D. (Figure 2).

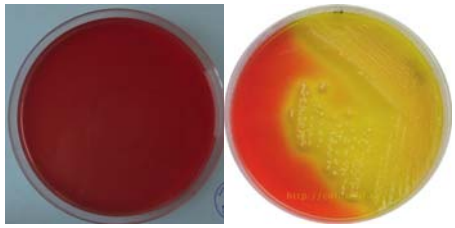

Fig. 2 XLD sterile environment (left), medium seed - colonies of Escherichia coli (right)

The results for samples analyzed in order to identify coliforms (table 2) the percentage revealed the fact that: the age of 9 months: 6% of samples were positive for target drinkers, 3% samples positive for objective feeders, 4% samples positive for objective of feed hopper, 0 % positive samples positive for objective walls hall; at 21 days of age: 9% of samples were positive for target drinkers, 12% samples positive for objective feeders, 9% samples positive for objective of feed hopper, 2 % positive samples positive for objective walls hall; at 35 days of age: 23% of samples were positive for target drinkers, 21% samples positive for objective feeders, 20 % positive samples for objective of feed hopper, 15 % positive samples for objective hall walls.

Table 2 Identification presence of coliforms

Place harvest	Nr. samples collected	9 days		21 days		35 days	
		Negative	Positive	Negative	Positive	Negative	Positive
Nipple line	60	54	6	51	9	37	23
Feeding line	50	47	3	38	12	29	21
Feed hopper	50	46	4	41	9	30	20
Walls halls	20	20	0	18	2	5	15
Total samples / hall	180	167	13	148	32	101	79
%	100%	93%	7%	82%	18%	56%	44%

The next parameter analyzed were: Bacteria of the family Enterobacteriaceae (fig. 3).

Fig. 3 - Salmonella spp . - Environment X.L.D

Bacteria of the Enterobacteriaceae family parameter results. (Table 3), in percent , has shown that: the age of 9 months: 8% of samples were positive for target drinkers, 4% samples positive for objective feeders, 5% samples positive for objective of feed hopper, 1 % positive samples positive for objective walls hall; at 21 days of age : 14% of samples were positive for target drinkers, 14% samples positive for objective feeders, 11% samples positive for objective of feed hopper, 4 % positive samples positive for objective walls hall; at 35 days of age: 25% of samples were positive for target drinkers, 22% samples positive for objective feeders, 4â18% samples positive for objective of feed hopper, 9 % positive samples positive for objective walls hall.

Table 3 Identification presence of bacteria in the family Enterobacteriaceae

Place harvest	Nr. samples collected	9 days		21 days		35 days	
		Negative	Positive	Negative	Positive	Negative	Positive
Nipple line	60	52	8	46	14	35	25
Feeding line	50	46	4	36	14	28	22
Feed hopper	50	45	5	39	11	32	18
Walls halls	20	19	1	16	4	11	9
Total samples / hall	180	162	18	137	43	106	74
%	100%	90%	10%	76%	24%	59%	41%

The parameter considered was number four: Determining the total number of germs. In this case, the culture medium used is PlateCount Agar (fig. 4).

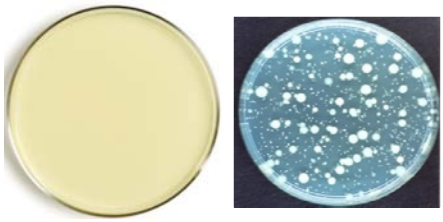

Fig. 4 Plate Count Agar medium (left - sterile environment; Right - colony forming units per PCA)

The results for the samples analyzed to determine the total number of germs (table 4) the percentages were: the age of 9 days: 8% of samples were positive for target drinkers, 2% samples positive for objective feeders, 1% samples positive for objective of feed hopper, 0 % positive samples positive for objective walls hall; at 21 days of age: 14% of samples were positive for target drinkers, 19% samples positive for objective feeders, 13% samples positive for objective of feed hopper, 9 % positive samples positive for objective walls hall; at 35 days of age: 29% of samples were positive for target drinkers, 2% samples positive for objective feeders, 22% samples positive for objective of feed hopper, 14 % positive samples positive for objective walls hall.

Table 4 Determination of the total number of germs

Place harvest	Nr. samples collected	9 days		21 days		35 days	
		Negative	Positive	Negative	Positive	Negative	Positive
Nipple line	60	52	8	46	14	31	29
Feeding line	50	48	2	31	19	26	24
Feed hopper	50	49	1	37	13	28	22
Walls halls	20	20	0	11	9	6	14
Total samples / hall	180	169	11	125	55	91	89
%	100%	94%	6%	69%	31%	51%	49%

The fifth parameter analyzed were: Determining the total number of fungi. To determine this parameter were made particularly DG plating 18 (fig. 5).

Fig. 5 - fungal colonies developed on the environment DG 18 (Dichloran Glycerol Agar)

The results for the samples analyzed to determine the total number of fungi (table 5) in percent, were: Age 9 days: 44% of samples were positive for target drinkers, 21% samples positive for objective feeders, 18% samples positive for objective of feed hopper, 4 % positive samples positive for objective walls hall; at 21 days of age: 51% of samples were positive for target drinkers, 32% samples positive for objective feeders, 28% samples positive for objective of feed hopper, 12 % positive samples positive for objective walls hall; at 35 days of age: 60% of samples were positive for target drinkers, 50% samples positive for objective feeders, 50% samples positive for objective of feed hopper, 20 %positive samples positive for objective walls hall.

Table 5 Determination of the total number of fungi

Place harvest	Nr. samples collected	9 days		21 days		35 days	
		Negative	Positive	Negative	Positive	Negative	Positive
Nipple line	60	16	44	9	51	0	60
Feeding line	50	29	21	18	32	0	50
Feed hopper	50	32	18	22	28	0	50
Walls halls	20	16	4	8	12	0	20
Total samples / hall	180	93	87	57	123	0	180
%	100%	52%	48%	32%	68%	0%	100%

CONCLUSIONS

We note that according to results obtained from surface microbial load bay rearing broilers show a significant rise in growth period to another. The more we age, the microbial load increases; cause weight gain as the birds that although 2-3 kg of weight in addition to the popular , occupying the same land (same m2).

This increase in the microbial load can lead to increased risk of disease and increased mortality; may adversely affect feed intake, leading to failure to gain weight.

To avoid a high rate of morbidity/mortality are recommended decontamination and rearing period, with substances that do not affect the health of offspring.

This can reduce the microbial load in the halls broiler growth.

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