

DISINFECTION OF AIR AND DUST IN FATTENING HOUSES FOR CHICKENS BY LACTIC ACID AEROSOL

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Abstract

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In laboratory trials, lactic acid administered in form of aerosol in doses of 720—787 mg/m³ devitalized *Pseudomonas* and *E. coli* strains within 30 minutes, *Streptococcus* strains within 48 hours following the treatment.

In trials carried out in housings with chickens kept on bedding, amounts of 1,535 mg lactic acid per 1 m³ were administered on days 15 and 25 respectively, and, of 420 mg/m³ on days 29 and 51 respectively. Decreased air contamination was registered with microbes growing on meat-peptone agar, mannitol agar with 7.5 % NaCl and Sabouraud agar till day 29 only, with microbes on Endo agar even on day 51 of age of the chickens. After administration of aerosol at the age of 15 to 51 days, the number of microbes per gram dust decreased with microbes growing on all substrates used.

Two different patterns of continual air disinfection by lactic acid were tested in fattening houses for chicks. Improved state of health was achieved with both of them, while the first pattern only resulted in higher gain of body mass. Pattern I showed a gain by 4 g per chicken higher and pattern II by 4 g/chicken lower than the blank turn of chickens. The differences were of no economical significance. With both programs, the mean consumption of lactic acid was 90 mg/day. With program I, there was no difference in microbial contamination of dust in experimental and control houses.

Aerosol disinfection, lactic acid, fattening of chickens, bedding.

Being an intermediary product of metabolism, lactic acid belongs to the preparations convenient for continual disinfection of byres with animals housed during its administration. According to Vaškov and Astafjev (1951) in Janíková (1970), vapour of lactic acid in the concentration of 200 mg/m³ air showed no toxic effect on laboratory animals even when systematically administered for several months. In common spaces for humans, the doses recommended for disinfection of air range around 10 mg/m³ (Karpuchin 1963). Doses of approximately 50 mg/m³ were administered in animal housings (Jarnych 1972; Vorobjev 1973) and, for food storehouses, Matyáš (1958) recommended 95—150 mg/m³.

The present report describes results of testing disinfection by lactic acid in laboratory trials and in fattening halls for chickens on bedding.

Materials and Methods

Laboratory trials were carried out in an airtight fume cupboard of 1.2 m³. Solutions of lactic acid were sprayed by means of the apparatus Mistral forming a comparatively fast sedimenting aerosol. Carriers with microbial cultures on Petri dishes were placed on the bottom level of the fume cupboard and kept there for 30 minutes or 48 hours respectively after exposure to spraying. Then the carriers were immersed into undiluted phosphate buffer in order to interrupt the action of the

lactic acid, and, after 10 minutes transferred to meat-peptone broth or, in the case of *E. coli* strains, to Chejfec substrate. During exposure, the carriers were protected by a layer of 2% agar. From half of them the protective layer has been shaken off either in the liquid substrate or in the phosphate buffer. Results were read after 48 hours of incubation at 37 °C.

The microbial strains used were fowl strains of *E. coli*, *Staphylococcus*, *Pseudomonas* and *Bacillus* from the collection of the Institut de pathologie aviaire I.N.R.A. at Nouzilly, C.R.Z.V. Tours, France. After 24 hours of growth on BHI gelatine broth, the *E. coli* strain had a mean of 9.4×10^6 , the *Staphylococcus* strain 9.1×10^8 , the *Pseudomonas* strain 1.2×10^8 and the *Bacillus* strain 3.2×10^7 microbes/ml substrate. Resistance against phenol after 5 and 10 minutes (+, -) corresponded to dilutions 1:109 with *E. coli* and *Staphylococcus*, 1:154 with *Pseudomonas* and 3:4 with *Bacillus*. The strains *E. coli*, *Staphylococcus* and *Bacillus* tested by the method of Vaškov (1952) showed to be thermoresistant to temperature of 60 °C for 35 minutes and to survive the following 6 days. Thermoresistance of *Pseudomonas* has not been examined.

For each microbial strain, five sterile filter paper discs of different shape were placed on a Petri dish. Volumes of 0.05 ml of 24 hrs broth cultures diluted up to 10^{-4} were administered on each paper carrier. After drying in the incubator, one half of the carriers with the microbes tested were covered by a layer of 2 % meat-peptone agar. As soon as the agar cover congelated, all paper carriers on Petri dishes to be examined were placed in the fume cupboard, while control paper carriers were left in the laboratory.

The field trial with aerosol of lactic acid was carried out in one division of a fattening hall for 3,760 chickens, having a space of 755 m³, and belonging to the farm Rašpach near Třeboň. The aerosol of particles around 60 μ was produced by two fogging devices Klimatex. The experiment was performed in the summer period. In the course of 6—7 hours of discontinual aerosol administration the behaviour of chickens was under permanent observation, and, the ventilation was kept permanently operating to maintain temperature and humidity within tolerable limits. Consequently, the total amount of lactic acid rose to 6.2 g/m³ with chickens aged 15 and 25 days, and to 3.6 g/m³ with chickens aged 29 and 51 days. In proportion to intensity of ventilation, the concentrations achieved with every administration were 307 mg/m³ lactic acid with chickens of 15 and 25 days, and, 84 mg/m³ with chickens of 29 and 51 days. With five discontinual administrations in the course of disinfection, there was a total of 1,535 mg/m³ and 420 mg/m³ respectively of lactic acid exerting influence on air and dust in the division with chickens.

Air samples were collected on 5 posts at the level of bedding prior to disinfection and one hour after the last administration of aerosol. The substrates used were meat-peptone agar, Endo agar, mannitol agar with 7.5 % NaCl and Sabouraud agar. The mean number of microbes per 1 m³ air was calculated by the formula of Spurný et al. (1961).

Simultaneously, 2—4 samples of dust were collected from the surface of electric hens, ventilators and heaters. They were wiped with sterile paper pads and inserted into sterile test tubes. In the laboratory, the dust samples were processed by the method of successive diluting with saline of pH 7.0, and, 0.1 ml of each dilution were inoculated in different substrates. Cultures on meat-peptone agar and Endo agar were kept for 24 hours, cultures on mannitol agar with 7.5 % NaCl for 72 hours in the incubator at 37°C, cultures on Sabouraud agar for 5 days at room temperature. Then colonies were counted and numbers of microbes/1 g dust calculated.

Another testing of lactic acid aerosol was carried out in the course of two fattening turns in double-halls for chickens kept on bedding at Židlochovice. The capacity of the halls was 10,000 chickens each. The halls were equipped with the device Funki and environmental conditions were controlled automatically. Fodder for both feeding lines was supplied from a common storage tank. One hall was selected for the experiment, the second served for control. Chickens were delivered to both halls from one hatchery at the same time.

During the first turn, chickens of 14 to 50 days of age were housed in the halls. Three fogging devices Klimatex were installed in the experimental hall. With chickens aged 14 and 15 days, 1,350 mg/m³ lactic acid were sprayed each day. During the following period of 34 days, 90 mg/m³ were administered daily. The Klimatexes were operated 6 times for 30 minutes daily while the ventilators were switched off. During the second turn, lactic acid was sprayed as soon as the first day of life of the chickens. From day 1 to 7, the amount sprayed was 45 mg/m³, from day 8 to 49, it was 90 mg/m³.

The state of health of chickens was under control by post-mortem examinations of dead birds, by inspection in the slaughterhouse at Modřice, by examination of a part of blood sera from slaughtered chickens for precipitating antibodies against adenoviruses by means of the FAV-1 (CELO) antigen, and, by evaluation of mortality and growth rates in the course of fattening.

With the first turn, samples of dust were collected from equipments in both halls, and, examined by the method of successive diluting for quantity of microbes growing on MPA, Endo agar, mannitol agar with 7.5 % NaCl, and on Czapek-Dox agar.

Table 1
Effect of disinfection by lactic acid aerosol in different amounts and concentrations on carriers with test-microbes

Experiment No.	Concentration of lactic acid	Way of administration	Consumption of lactic acid/m ³	A										B										Dilution of 24 hrs culture		
				Test-microbes										Test-microbes												
				protected					unprotected					protected					unprotected							
				E PK	St PK	P _s PK	B PK	E PK	St PK	P _s PK	B PK	E PK	St PK	P _s PK	B PK	E PK	St PK	P _s PK	B PK							
II	4 %	3 × interruption, break 30 minutes	720 mg T _i = 18.0 °C	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	0	
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-1
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-2
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-3
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-4
II	4 %	3 × interruption, break 30 minutes	720 mg T _i = 18.0 °C	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	0
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-1
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-2
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-3
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-4
III	0.4 %	3 × interruption, break 30 minutes	773 mg T _i = 17.5 °C	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	0
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-1
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-2
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-3
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-4
IV	0.4 %	3 × interruption, break 30 minutes	787 mg T _i = 16.5 °C	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	0
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-1
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-2
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-3
				++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	-4

Note: A: carriers with test-microbes treated after 30 minute exposure, B: carriers with test-microbes treated after 48 hrs exposure, P — experiment, K — control, St = Staphylococcus, P = Pseudomonas, E = E. coli, B = Bacillus

Results

The results are illustrated in Tables 1, 2, 3, 4, and, in Figures 1 and 2.

From Tab. 1 it is evident that all strains protected by agar layer survived 30 minutes and 48 hours following disinfection in spite of the high doses of 720 to 787 mg/m³ of lactic acid sprayed. Without protection, *Pseudomonas* strains only were devitalized, *E. coli* partly, and, after 40 hours *Staphylococcus* also. The *Bacillus* strain remained resistant to the aerosol of lactic acid.

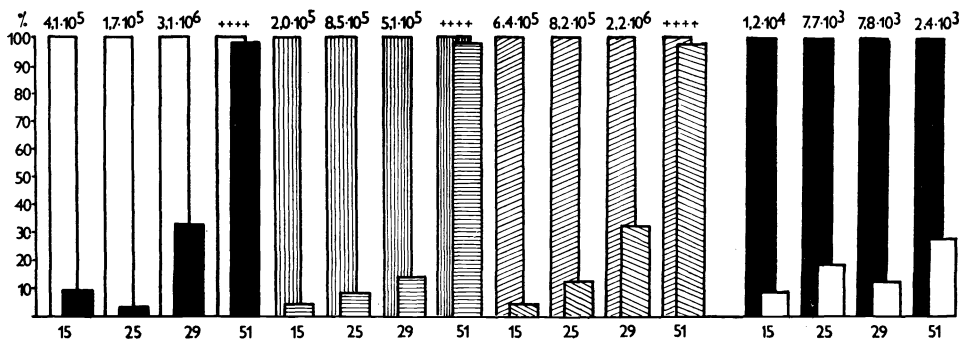


Fig. 1.

Microbial contamination of 1 m³ air in the fattening hall for chickens on bedding prior (100 %) and following (X %) disinfection of air by aerosol of lactic acid.

x-axis: age of chickens in days

y-axis: numbers of microbes (in %). 100 % corresponds to values prior to disinfection which are noted above the columns in the figure

+
+
+ disinfection carried out without collecting samples of dust



microbes growing on meat-pepton agar



microbes growing on mannitol agar with 7.5 % NaCl



microbes growing on Sabouraud agar



microbes growing on Endo agar

From Fig. 1 it can be seen that disinfection of air in the hall by lactic acid aerosol administered in the large amounts of 1.535 mg/m³ and 420 mg/m³ was efficient against microbes growing on MPA, mannitol agar with salt and Sabouraud agar till 4 weeks only (chickens aged 29 days). With microbes growing on Endo agar, their quantity decreased successively (1.2×10^3 , 7.7×10^3 , 7.8×10^3 , 2.4×10^3) from day 15 to day 51. Compared with the numbers prior to disinfection and at 7–8 weeks (chickens 51 days of age), more than 60 % of microbes were devitalized by lactic acid aerosol.

Fig. 2 illustrates that at day 51, microbial contamination of air was substantially higher than at days 29, 25, and 15, but, disinfection by aerosol of lactic acid resulted in spite of that in devitalization of the microbes examined.

Table 2
State of health and working indicators. Turn 1 — fattening of chickens

I. Pathological findings	Experimental hall	Control hall
Volvulus	1 × 3.12 %	0 0 %
Enteritis	16 × 50.00 %	17 × 63.00 %
Suffocation	5 × 15.62 %	4 × 14.80 %
Mycoplasmosis	3 × 9.38 %	1 × 3.70 %
no finding	4 × 12.50 %	0 0 %
Haemorrhagic syndrom	1 × 3.12 %	4 × 14.80 %
Rupture of liver	2 × 6.25 %	1 × 3.70 %
Parasitological examination negative with all samples		
II. Inspection in slaughterhouse		
Mortality due to transportation	13 chicks (= 20 kg)	14 chicks (= 20 kg)
Fit under precautions:		
Leucosis	0 chicks	5 chicks
Marek's disease	0 chicks	3 chicks
Mycoplasmosis	0 chicks	21 chicks
other disease	0 chicks	12 chicks
Confiscation due to pathologicals changes:		
Emaciation	22 chicks	44 chicks
other	0 chicks	6 chicks
Confiscation due to technological deficiencies:		
slaughtered in agony	4 chicks	16 chicks
mechanical damage	6 chicks	0 chicks
III. Serological examination of blood sera for presence of precipitation antibodies against adenoviruses (antigen FAV-1 (CELO))		
	No positive from 98 samples	Seven from 96 samples (7.3 %) positive
IV. Working indicators:		
housed day 1	9,926 chicks	9,926 chicks
housed day 51	9,695 chicks (13,990 kg)	9,661 chicks (13,530 kg)
body mass/chicken	1.44 kg	1.40 kg
mortality	231 chicks/2.39 %	265 chicks/2.74 %
quality	90.15 % — I. category	90.00 % — I. category
food consumption of both groups	2.211 kg	2.211 kg

Tab. 2 demonstrates that 7.3 % of blood sera showed antibodies against adenoviruses in the control hall while no positive reactions were registered in the experimental hall (III). Neither were observed in the slaughterhouse pathological changes due to leucosis, Marek's disease, mycoplasmosis or other diseases (II). Working indicators were less convincing, though mortality was lower and body mass gain a little higher than in the control hall (IV).

From Tab. 3 it can be seen that the lactic acid administered had no effect on the number of microbes/g dust. Obviously the administered dose of 15 mg/m³ (90 mg/6 m³) which sedimented on the surface of equipments, displayed no dis-

Table 3
Microbial contamination of 1 g dust in the experimental and control hall. Turn 1 — fattening of chickens

	Hall	MPA	Endo agar — 1 + microbes	Endo agar — total of microbes	Mannitol agar with 7.5 % NaCl	Czapek-Dox agar-fungi	Czapek-Dox agar-yeast	Czapek-Dox agar-total
EXPERIMENTAL	Prior disinfection (13 days) Following disinfection (day 50) Difference expressed by extent of mathematical order	4.3×10^{10} 1.1×10^{11} + 0.68	1.6×10^6 1.2×10^6 — 0.04	6.8×10^4 3.5×10^4 — 0.33	9.0×10^8 9.8×10^8 + 0.08	3.0×10^8 1.4×10^8 — 0.16	7.2×10^9 2.0×10^{10} + 0.48	7.5×10^9 2.1×10^{10} + 0.46
	13 days 55 days Difference expressed by extent of mathematical order	1.2×10^{10} 1.5×10^{10} + 0.03	1.1×10^6 4.2×10^5 — 0.69	7.0×10^4 8.9×10^4 — 0.71	2.1×10^8 1.2×10^8 — 0.09	3.2×10^8 4.2×10^7 — 0.80	4.5×10^9 2.5×10^9 — 0.20	4.8×10^9 2.5×10^9 — 0.23
CONTROL								

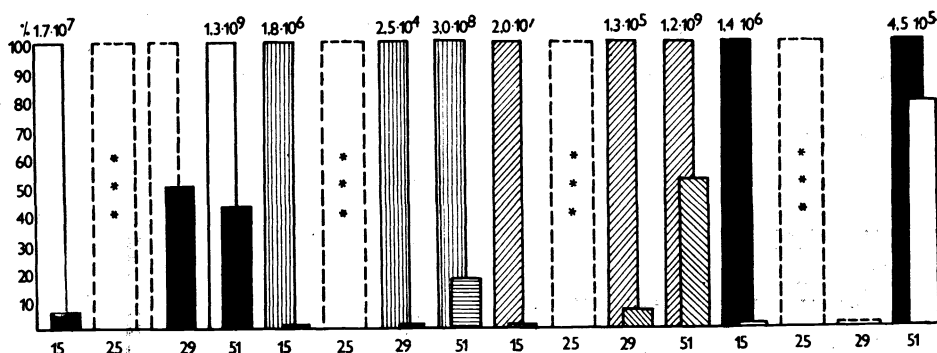


Fig. 2.

Microbial contamination of 1 g dust in the fattening hall for chickens on bedding prior to (100 %) and following (X %) disinfection of air by aerosol of lactic acid.

x-axis: age of chickens in days

y-axis: numbers of microbes (in %). 100 % corresponds to values prior to disinfection which are noted above the columns in the figure

+ disinfection carried out without collecting samples of dust



microbes growing on meat-peptone agar



microbes growing on mannitol agar with 7.5 % NaCl



microbes growing on Sabouraud agar



microbes growing on Endo agar

infecting effect by moistening the mixture of secondarily falling dust particles. The dust samples were indeed loose and of dry consistency.

As it results from Tab. 4, most indicative was the effect of lactic acid aerosol when the presence of precipitating antibodies against adenoviruses was tested in blood serum samples. Here again, there were fewer positive reactions in the experimental hall than in the control hall (III: 17.5 %: 32.1 %). Inspection of slaughtered chickens also showed a better situation in the experimental hall (II) than in the control hall (1.79 %: 2.08 %). Nevertheless, body mass gain was higher with controls (1.42 kg) than with chickens from the experimental hall (IV: 1.38 kg).

Discussion

Laboratory trials concerning the effect of lactic acid on 24 hrs microbial cultures already showed that even the comparatively high dosis of 720—787 mg/m³ devitalized only microbes with the level of resistance of *Pseudomonas* and *E. coli* strains. By longer exposure in unprotected environment, microbial species on the level of resistance of *Staphylococcus* were devitalized as well. From Tab. 1 it is also evident that

Table 4
State of health and working indicators. Turn 2 — fattening of chickens

I. Post-mortem: In consequence of experience from turn 1 no post — mortem examination carried out		
II. Inspection in slaughterhouse:		
	Experimental hall	Control hall
Fit under precautions:		
Marek's disease	8	14
Mycoplasmosis	9	5
other diseases	6	8
Confiscation due to pathological changes:		
Emaciation	17	11
Haematomas	3	14
other changes	7	14
Confiscation due to technological deficiencies:	11	12
III. Serological examination of blood sera for presence of precipitation antibodies against adenoviruses (antigen FAV-1 (CELO))		
	14 from 80 (= 17.5 %) positive	26 from 81 (= 32.1 %) positive
IV. Working indicators:		
housed day 1	9.732 chicks	10.034 chicks
housed day 51	9.540 chicks (13.180 kg)	9.825 chicks (13.952 kg)
body mass/chicken	1.38 kg	1.42 kg
mortality	192 chicks/1.97 %	209 chicks/2.08 %
quality	90.0 % — I. cat.	90.0 % — I. cat.
food consumption for both groups	2,450 kg	2,450 kg
age of chickens	50 days	50 days

dilutions of 4 % were less effective than dilutions of 0.4 %. With 0.4 % dilutions administered, the amount of lactic acid was by 50—60 mg higher, the volume of dilution was 10 times larger and so was the amount of aerosol sedimented on the bottom of the exposed Petri dish containing the microbes tested. This appears to be the decisive factor when *Staphylococcus* strains without protective agar layer were devitalized after 48 hrs exposure following administration of aerosol. The conclusion is supported by results with 5 % and 7.5 % dilutions of lactic acid, not recorded in the Table. The amounts of 833.3 mg and 2.108 mg/m³ respectively resulted after 30 minutes of exposure in the first case only in devitalization of the *Pseudomonas* strain and that with the highest dilution of 10⁻⁴, and in the second case, in devitalization of *Pseudomonas* and *E. coli* strains with dilutions of 10⁻⁴ to 10⁻². Microbial species protected by an agar layer, could not be devitalized after 30 minutes of exposure, regardless to the degree of dilution, as had been demonstrated in supplementary trials by Fišer (1977).

Results of the field trial are illustrated on Fig. 1 and 2. A partial decrease of microbial contamination of air and dust could be registered not earlier than after 5 separated administrations of aerosol sprayed in comparatively large amounts of 1.535 mg and 420 mg/m³ respectively. The term „partial decrease“ is to be underlined since effectivity was registered in per cent, and consequently, the decrease in number of microbes ranged within one mathematical order. Thus, even after disinfection by aerosol, the microbial contamination of air and dust in the hall with fattened chickens remained on a high level when compared with

values noted prior to disinfection and at different days of examination (days 15, 25., 29. and 51. of age of chickens). In addition, dust samples wiped from the surface of electrical hens and heaters after disinfection were wet and pasty so that a prolonged effect of sedimented aerosol on the microflora of the secondarily fallen dust could be assumed. The best cumulative effect was observed after the third disinfection (at the age of 29 days of the chickens housed). Already prior to this disinfection, sporulates only were grown on MPA from dust, and, the number of microbes on mannitol agar with salt and Sabouraud agar was by two mathematical orders lower than with chickens aged 15 days. Neither before nor after this disinfection, microbes from dust were grown on Endo agar (Fig. 2). Microbial contamination of the bedding which is the primary source of dustiness, was not examined presently. However, experience with dynamics of microbes in bedding in the course of fattening chickens (Fišer 1977), and, with difficulty in disinfecting bedding by gaseous formaldehyde (Fišer 1978), permits to assume that aerosol of lactic acid has no effect on the contamination of bedding. From results reported by Cole et al. (1968) the conclusion can be made that sedimented lactic acid exerts a favourable effect on the organism of chickens. In agreement with the results in Fig. 1 are also the results described by Devos (1971) who achieved decrease in airborne microflora not longer than to the fifth week of life of chickens, when different preparations were sprayed in halls for fattening chickens. Unlike ours, his chickens had a higher final body mass while their feed consumption index was lower.

From our two field trials, only chickens in the first one were heavier than controls to the end of the fattening turn. In both trials, nevertheless, continual disinfection by aerosol of lactic acid resulted in an improved state of health of chickens. Their mortality was lower, few blood serum samples showed the presence of precipitation antibodies against adenoviruses, less pathological changes were detected by inspection in the slaughterhouse. The importance of lactic acid aerosol for controlling infectious laryngotracheitis and for improving generally the state of health in poultry has been emphasized by Jarnych (1972). Thus, disinfection by lactic acid in the form of aerosol is a recommendable procedure but, according to our present results, a higher dose than 90 mg/m^3 and interrupted administration have to be considered. In order to improve the effect on the microflora of air and dust, amounts of $300\text{--}400 \text{ mg/m}^3$ appear to be necessary.

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Dezinfekce ovzduší a prachu v hale pro kuřata ve výkrmu aerosolem kyseliny mléčné

Kyselina mléčná aplikovaná formou aerosolu devitalizovala v laboratorních pokusech při dávkách 720 až 787 mg na 1 m^3 prostoru po 30 minutách od skončení aerolizace kmeny *Pseudomonas* a *E. coli* a po 48 hodinách od skončení aerolizace i kmeny *Staphylococcus*.

V provozních pokusech bylo dosaženo snížení mikrobiální kontaminace ovzduší v oddělení s kuřaty na podestýlce při celkové dávce kyseliny mléčné aplikované přerušovaně v množství 1.535 mg 15. a 25. den a 420 mg 29. a 51. den u mikrobů rostoucích na masopeptonovém agaru, na mannitovém agaru s $7,5 \%$ NaCl a na

Sabouraudově agaru pouze do 29 dnů stáří kuřat. U mikrobů na Endově agaru bylo prokázáno snížení i u kuřat ve stáří 51 dnů. V 1 g prachu bylo prokázáno snížení množství mikrobů rostoucích na všech uvedených půdách včetně Endova agaru od 15. až do 51. dne stáří kuřat po aplikaci dezinfekčního aerosolu kyseliny mléčné.

Při ověřování dvou různých programů kontinuální aerosolové dezinfekce ovzduší hal pro výkrm kuřat kyselinou mléčnou bylo dosaženo zlepšení zdravotního stavu kuřat, avšak zvýšení hmotnosti kuřat na konci výkrmového turnusu při jejich vyskladnění bylo prokázáno pouze při použití prvního programu. Zvýšení hmotnosti na 1 kus o 4 g u kuřat vyskladněných z pokusné haly neovlivnilo ekonomikou efektivitu pokusného turnusu ve srovnání s kontrolním turnusem při aplikaci prvního programu kontinuální dezinfekce, stejně jako nebyla ovlivněna ekonomická efektivita kontrolního turnusu kuřat při aplikaci druhého programu kontinuální dezinfekce při zvýšení hmotnosti vyskladněných kuřat oproti pokusnému turnusu kuřat rovněž o 4 g na 1 kus. V obou programech byla průměrná denní spotřeba kyseliny mléčné na 1 m³ vzduchu 90 mg. Mikrobiální kontaminace 1 g prachu v pokusné a kontrolní hale při plnění prvního programu nebyla rozdílná

Дезинфекция атмосферы и пыли в цыплятнике для откорма цыплят аэрозолем молочной кислоты

Молочная кислота, применяемая формой аэрозоли, дезинфицировала в лабораторных опытах дозой 720—787 мг 1 м³ пространства спустя 30 минут после окончания аэролиза штаммы *Pseudomonas* и *E. coli* и спустя 48 часов после окончания аэролиза также штамм *Staphylococcus*.

В проводимых непосредственно в цыплятнике опытах было достигнуто понижения микробной контаминации атмосферы в отделении с цыплятами на подстилке при общей дозе молочной кислоты, применяемой с перерывами в количестве 1.535 мг на 15 и 25 день и 420 мг на 29 и 51 день у микробов, растущих в мясо-пептонном и маннитном агаре с 7,5 NaCl и в агаре Сабу-рода лишь до 29 дней возраста цыплят. У микробов в агаре Энда было выявлено понижение также у цыплят в возрасте 51 день. В 1 г пыли было установлено понижение микробов, растущих во всех вышеприведенных агаре, включая агар Энда, с 15 по 51 день возраста цыплят после использования дезинфекционной аэрозоли молочной кислоты.

В ходе проверки двух разных программ непрерывной аэрозольной дезинфекции атмосферы цыплятников для откорма цыплят молочной кислотой было достигнуто улучшения состояния здоровья цыплят, однако, увеличение массы цыплят к концу цикла откорма было доказано лишь при использовании первой программы. Увеличение массы на 1 голову на 4 г цыплят, отправленных из подопытного цыплятника, не оказало влияния на экономическую эффективность опытного цикла по сравнению с контрольным циклом при использовании первой программы непрерывной дезинфекции и в одинаковой степени не наблюдалось никакого влияния на экономическую эффективность контрольного цикла цыплят при применении второй программы непрерывной дезинфекции при увеличении массы отправленных цыплят по сравнению с подопытными цыплятами также на 4 г на голову. В обеих программах средний суточный расход молочной кислоты на 1 м³ воздуха достигал 90 мг. Микробная контаминация 1 г пыли в опытном и контрольном цыплятниках при выполнении первой программы не отличалась разницей.

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