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+ NaOH 1% (83.3, 74.2, 51.6) and lastly antigermin (40.5, 24.3, 5.4) respectively.

The effect of the disinfectants on fungi and air-borne bacteria were investigated.

INTRODUCTION

Disinfection of poultry houses is the most efficient procedure in the environmental management of the disease. The use of aerosol disinfectant specially in the occupied premises was found to be the most effective procedure for decontaminating air.

Lactic acid alone or mixed with other agents as an aerosol disinfectant was recommended by many authors for poultry and animal buildings. SYRNIKOVA (1974) proved that lactic acid and hydrogen peroxide plus citric acid were efficient aerosol disinfectants. Also, PERKOV *et al.* (1975) found that lactic acid aerosol in a quantity of 20 ml/m³ of air space reduced the number of microorganisms in the air by three or four times and decreased the count of coliform bacteria. Furthermore FISER (1978) reported that lactic acid aerosol in a concentration of 300-400 mg/m³ was effective against the microflora of the air and dust.

More trials are well established to determine the efficiency of some other types of aerosol disinfectant, in controlling many poultry infections. BEREZNEV (1978) recommended the use of sodium hypochlorite aerosols with 2% active chlorine (150 ml/m³) to halt the spreading of mycoplasma infection among poultry populations. In addition COMAN *et al.* (1979) proved that aerosol disinfectant of Bromocet + iodosept sprayed in rooms of a confined chicken houses reduced the microbial count by 47% and 51% respectively. They added that the utilization of these aerosol disinfectants cause no troubles to the birds but they gave higher performance at the end of the experiments.

The aim of this work is to reduce the biological aggressiveness of air in the occupied building by using some available and suitable aerosol disinfectants.

MATERIAL and METHODS

Field trials were carried out on broilers raised on deep litter. The chicken were reared from their 1st to 50th days of age in a house of 96 m² floor space. Each house contains 1000 birds. The ventilation was achieved inside the house, naturally by windows and artificially by suction pumps.

Preparation of the disinfectants used :

The chosen disinfectants were prepared as follows:

1- Mixture of lugol's solution and 1% sodium hydroxide. Lugol's solution was prepared by adding a mixture of 1 gm iodine and 2 gm potassium iodide to 300 ml water. The solution obtained was then diluted 1:16 (FUSTES *et al.*, 1985) followed by addition of an equal volume of sodium hydroxide 1% to it.

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- 2- Nascosept 0.2% as a quaternary ammonium compounds.
- 3- Antigerms as 54.4% quaternary ammonium compounds double component system and was used in 0.1%.
- 4- Lactic acid 2%.
- 5- Chlorinated lime contain active chlorine 37% and was used as 10 gm/Liter.

Application of the disinfectants and bacterial examination of air:

Each disinfectant solution was sprayed in the broiler house by means of spraying device. The apparatus was controlled at a pressure that 17.4 ml of the applied disinfectant was mixed with every cubic meter of air space during the 25 minutes application.

The initial contamination level at the broiler house before the application as well as the decontaminant effect of each disinfectant were checked through microbial evaluation of the air using the liquid impinger (COWN *et al.*, 1956), with special reference to *Mycoplasma gallisepticum*, *Pasteurella multocida*, *Streptococcus faecalis*, *Staphylococcus aureus* and *E. coli* as well as some species of fungi including *penicillium* species, *Aspergillus* and *Mucor* species.

The total germ numbers and identification of the microbial isolates which recovered before and after 1, 4 and 24 hrs. from application of any disinfectant were identified according to EAILY and SCOTT (1978); CRUICKSHANK *et al.* (1980) and SABRY (1968).

RESULTS

Results are tabulated in tables 1, 2, 3 and 4.

DISCUSSION

Its evident from table (1) that Nascosept was the most efficient aerosol disinfectant after 1, 4, 24 hrs. from exposure giving a reduction % of 86, 65, 52.5 respectively, followed by chlorinated lime (86.3, 65.9, 50) and lugol's solution + Na OH 1% (86.8, 74.2, 51.6). On the other hand, lactic acid and antigerm gave the lowest efficiency where their reduction % were 64.1, (53.33, 31.6) and (40.5, 24.3, 5.4) after 1, 4, 24 hrs. exposure respectively.

It is worth mentioning that the use of lactic acid in 2% conc. was efficient and gave a comparatively similar results to that previously obtained by PERKOV *et al.*, 1975 and FISER, 1978. However, the reduction in the concentration of such agent to 2% is necessary in order to prevent its irritant effect on the mucous membrane of the eye and upper respiratory tract.

The effect of the applied disinfectants on the different species of microbes are tabulated in tables 2, 3. It is clearly evident from these tables that Nascosept, chlorinated lime and lactic acid were the most superior aerosol disinfectants on the different species of bacteria and fungi than the other two agents.

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Nascospt is the most efficient disinfectants on *Mycoplasma gallisepticum*, *Pasteurella multocida* and staphylococci which they failed to detect in any of the 24 hours exposure. Other organisms including strept. *Faecalis*, *E. coli* were inhibited for only 1 and 4 hrs. after exposure respectively.

Chlorinated lime was found to be one of the most efficient disinfectant on *Mycoplasma gallinerium* and *Pasteurella multocida* (24 hrs. inhibition). Other microbes comprising of staphylococci and *E. coli* could be recovered from the air after 1 and 4 hours from application respectively.

Lactic acid was found to be one of the best disinfectant on *Mycoplasma gallisepticum*, *Pasteurella multocila*, *Aspergillus gluacous*, *Aspergillus nidulans* which were not recovered during the 24 hrs. after exposure. Its disinfecting power on staphylococci and *E. coli* was limited only to one hour after exposure.

Lugol's solution and antigerm had no inhibitory effect on all the recovered isolates except *Aspergillus ustes*, *Mucor* species which were inhibited by lugol's solution during the 24 hrs. after exposure.

From the results achieved one can safely conclude that Nascosept, chlorinated lime and lactic acid were the best aerosol disinfectants aganist bacteria specially *Mycoplasma gallisepticum* and *Pasteurella mullocida* and thus may be used in controlling epidemics caused by these agents. In addition chlorinated lime may give a beneficial results as a fungicidal agents in occupied buildings where moulds are present. However, the use of aerosol disinfectant once a day is necessary specially in the occupied buildings to reduce the bacterial population inside the house (PERKOV et al., 1975; FISER, 1978) as well as decrease the risk of infection (KHATSKEVIOH et al., 1982; BEREZNEV, 1978) and inturn increase the body gain (PERKOV et al., 1975).

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Table (1): T.G.C. and the reduction % after application of 5 types of aerosol disinfectants.

Type of disinf.	Cono.	T.G.C. before use of disinfectant	Total colony count after application			Reduction % after application		
			1 hr	4 hrs	24 hrs	1 hr	4 hrs	24 hr.
Iscosept	0.2%	200.10 ⁵	24.10 ⁵	70.10 ⁵	95.10 ⁵	88 %	65 %	52.5%
Chlorinated lime	10gm/L	44.10 ⁵	6.10 ⁵	15.10 ⁵	22.10 ⁶	86.3%	65.9%	50 %
Iugol's + Na OH	Iugol's + 1%Na OH	62.10 ⁵	10.10 ⁵	16.10 ⁵	30.10 ⁵	83.8%	74.2%	51.6%
Lectic acid	2%	120.10 ⁵	43.10 ⁵	56.10 ⁵	82.10 ⁵	64.1%	53.3%	31.6%
Antigerm	0.1%	37.10 ⁵	22.10 ⁵	28.10 ⁵	35.10 ⁵	40.5%	24.3%	5.4%

⊠ T.G.C. = Total germ count.

Table (2): Indicator bacteria isolated before and after application of the five aerosol disinfectants.

Type of disinfectant	Conc.	Bacteria									
		E. coli				Strept. faecalis					
		Before	After	Before	After	Before	After	Before	After		
Nescosept	0.2 %	+ ve	- ve	- ve	+ ve	+ ve	- ve	+ ve	+ ve	+ ve	+ ve
Chlorinated lime	10gm/L	+ ve	- ve	- ve	+ ve	- ve	- ve	- ve	- ve	- ve	- ve
Iugol's + Na OH	Iug 1:16 +Na OH 1%	+ ve	- ve	+ ve	+ ve	- ve	- ve	- ve	- ve	- ve	- ve
Lactic acid	2%	+ ve	- ve	+ ve	+ ve	- ve	- ve	- ve	- ve	- ve	- ve
Antigerm	0.1%	+ ve	+ ve	+ ve	+ ve	- ve	- ve	- ve	- ve	- ve	- ve

Table (3): Airborne bacteria isolated before and after application of the five aerosol disinfectants.

Type of disinfectant	Conc.	Staphylococci		Mycoplasma gallisepticum		Pasteurella multocida							
		Before	After	Before	After	Before	After						
Rascosept	0.2%	- ve	- ve	- ve	- ve	+ ve	- ve	- ve	- ve	+ ve	- ve	- ve	- ve
Chlorinated lime 10gm/l.		+ ve	- ve	+ ve	+ ve	+ ve	- ve	- ve	- ve	+ ve	- ve	- ve	- ve
Lugol's + Na OH	Lug 1:16 + Na OH 1%	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve
Lactic acid	2%	+ ve	+ ve	+ ve	+ ve	+ ve	- ve	- ve	- ve	+ ve	- ve	- ve	- ve
Antigerin	0.1%	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve	+ ve

Table (4): Fungus isolated before and after application of five aerosol disinfectants.

Type of disinf.	Conc.	Fungus isolated		
		before application	after application	
		1 hr	24 hrs	
Nasosept	0.2%	Fenicillium sp.	+ ve	+ ve
		A. flavus	+ ve	+ ve
Chlorinated Lime	10 gm/L	A. niger	+ ve	+ ve
		Mucor sp.	+ ve	+ ve
		A. niger	+ ve	+ ve
		A. flavus	- ve	- ve
		A. terreus	- ve	- ve
Iugol's + Na OH	Iug 1:16 + 1% Na OH	A. flavus	+ ve	+ ve
		A. ustes	- ve	- ve
		Mucor sp.	- ve	- ve
Lactic acid	2 %	Pencillium sp.	+ ve	+ ve
		A. flavus	+ ve	+ ve
		A. glaucus	- ve	- ve
		A. nidulans	- ve	- ve
Anligerm	0.1%	A. flavus	+ ve	+ ve
		Mucor sp. A. ustes	+ ve + ve	+ ve + ve