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IN-VITRO STUDY OF SOME SELECTED DISINFECTANTS ON SOME PATHOGENS OF HYGIENIC SIGNIFICANCE IN VETERINARY PRACTICE

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ABSTRACT :

The germicidal effect of five selected commercial disinfectants included, TH4+; Tek-Trol; Biocide-30; Sodium hypochlorite and Formaline were evaluated on four bacterial strains (*Staphylococcus aureus; Escherichia coli; Salmonella doublin and Clostridium perfringens*) and four mould and yeast species (*Asperigullus flavus; Asperigullus fumigatus; Asperigullus niger and Candida albicans*). Three concentrations of each disinfectant compound including the recommended one as well as, higher and lower concentrations were tested on each experimented strain after 5, 15, 30 and 60 minutes. The obtained results revealed that, at the recommended concentration the organic disinfectants had a very strong germicidal effect on most of the experimented bacterial; fungal and yeast strains with inhibition percentages up to 100% within 5 minutes after the disinfectant application. On the other hand, the inorganic disinfectants had reasonable germicidal effect on most of the tested organisms after moderately longer periods of application. From the achieved data it could be concluded that the organic disinfectants are the disinfectants of choice to be used in the veterinary fields due to their high efficacy in destruction of the pathogenic organisms beside their safety use.

INTRODUCTION:

Resent expansion in use of the intensive systems of livestock housing and management increase the problem of controlling the spread of infection and disease occurrence. A comprehensive sanitation program is one of the essentials for achieving effective combating of infection and diseases control (Woodward *et al.*, 1933; Lawrence, 1950; Klarmann & Wrigh, 1954; Spaudling, 1961; Ismail, 1967; Moustafa, *et al.*, 1976 and Sainsbury & Sainsbury, 1982). Production of good quality milk require healthy dairy animals and hygienic environment (Bodman *et al.*, 1988). Presence of pathogenic bacteria and fungi in animal environment leading to infection (Ahmed *et al.*, 1988; Al-Hawary 1997; Edwards & Ewing, 1972; Fantasia *et al.*, 1975; Finegold & Martin, 1982; Hobbs & Gilbert, 1978 and Irodanov *et al.* 1970). Disinfection of animal and poultry confinements has been recommend widely by dairy and poultry advisors to control the environmental pathogens (Bramley & Dott, 1984; Eberhart & Buckalew, 1972; Eberhart *et al.*, 1983; Oliver *et al.*, 1989; Oliver *et al.*, 1991;

Oliver & Mitchell, 1984 and Smith *et al.*, 1985). Wide varieties of disinfectants are commercially available, including quaternary ammonium compounds; glutaraldhyde; synthetic phenolic compounds; iodine compounds; chlorine; chlorine derivatives; alkalis and formaldehyde (Ansari, 1985; Morishita, 1990 and Davison *et al.*, 1996). Several authors reported the efficiency of the common disinfectants on certain species of microorganisms included bacteria, fungi and yeasts (Woodward *et al.*, 1933; Lawrence, 1950; Klarmann & Wrigh, 1954; Spaudling, 1961; Ismail, 1967; Moustafa, *et al.*, 1976; Oliver *et al.*, 1991; Oliver *et al.*, 1993; Davison *et al.*, 1996; Mir *et al.*, 1997 and Tsai & Lin, 1999). Disinfection against certain environmental pathogens has long been tried and established. A lot of disinfecting agents had been proved to have significant germicidal action against certain bacterial, fungal and yeast species. Many of the previous trails were conducted on a single type of microorganisms or disinfectants (Woodward *et al.*, 1933; Weirich & Pokorny, 1942; Emmons, 1945; Fishman *et al.*, 1966; Abou-Gabal & Abd-Elrahiem, 1973; Scarpino *et al.*, 1974; LeChevallier *et al.*, 1984; Huang *et al.*, 1997 and Tsai & Lin, 1999).

The aim of the present study was conducted to evaluate the effectiveness of some various commercially available disinfectants on some of significant microorganisms included bacterial, fungal and yeast species of widely distribution in animal and poultry environment.

MATERIALS AND METHODS:

I-Experimental Pathogens:

a–Bacterial species: Four bacterial strains were selected included :

1-*Staphylococcus aureus.*
2-*Escherichia coli* .
3-*Salmonella dublin.*
4-*Clostridium perfringens.*

These bacterial species were obtained from the Animal Health Institute, Dokki, Giza, Egypt. A loopfull from 24 h. nutrient agar slope was transferred to 10 ml nutrient broth and incubated at 37°c for 18-24 h. A total colony count was determined by the plating technique (Cruickshank *et al.*, 1980 and Tuncan, 1993).

b–Mould and yeast species : Four mould and yeast strains were selected included :

1-*Aspergillus flavus.*
2-*Aspergillus fumigatus.*
3-*Aspergillus niger.*
4-*Candida albicans.*

The mould and yeast strains were submitted from Institute of Animal and Environmental Hygiene, Free University, Berlin, Germany. The mould and yeast cultures were harvested from Sabroud dextrose agar and transferred to 20 ml sterile saline in 100 ml capacity flasks. Sterile glass beads were added and the bottles were placed on a shaker for uniform distribution of the fungal spores in the saline. The total count was determined by plating technique according to Cruickshank *et al.* (1980).

II–Tested Disinfectants:

Three concentrations of each tested disinfection were used including lower, higher as well as the recommended concentration by the producer company. Five common widely used disinfectants were selected in the present investigation included :

1–TH4+: A powerful hydrophilic biocide (Glutaraldhyde) activated by a specific blend of different lipophilic biocides, which are :

-Didecyldimethyl ammonium chloride-----8.75 g/L
-Dioctyldimethyl ammonium chloride-----18.75 g/L
-Octyldecyldimethyl ammonium chloride-37.50g/L

-Alkyldimethyl benzyl ammonium chloride--50g/L
-Glutaraldhyde----------
62.50/L
-Pine oil----------
20g/L
-Terpineol----------
20g/L

Plant extracts (Pine oil and Terpineol) improve the permanence and convey a pleasant fragrance. The different used concentrations of TH4+ were 1/100, 1/200 and 1/300.

2-Tek-Trol: It is a 26% phenolic compound. The different used concentrations of Tek-Trol were 1/125, 1/256 and 1/500.

3-Biocide-30: It is a 2.75% available iodine + 9.5% phosphoric acid +9.3% sulphoric acid + 24.2% non-ionic surfactants. The different used concentrations of Biocide-30 were 1/300, 1/400 and 1/500.

4–Sodium hypochlorite : The different used concentrations of Sodium hypochlorite were 200p.p.m., 100p.p.m. and 50p.p.m.

5–Formaline: The different used concentrations of Formaline were 5%, 1% and 0.5%.

RESULTS:

The obtained results were illustrated in Tables (1, 2, 3 & 4) and Figures (1– 8).

DISCUSSION:

Protection of livestock environment against spreading of infection has become a major concern allover the world . In the present study various compounds were used covering a wide range of the most common disinfectants in the veterinary field including phenols, quaternary ammonium compounds, formaline and iodine compounds. Data presented in Tables (1& 3) and Figures (1-4) demonstrated that organic disinfectants had a very strong bactericidal effect on all bacterial strains that used in the present investigation. The obtained results showed that, *Staphylococcus aureus, Escherichia coli, Salmonella dublin* and *Clostridium perfringens* were completely destroyed within five minutes by the recommended concentrations of the variable tested disinfectants that included TH4+, Tek-Trol and Formaline. Moreover, the lower concentration of 100 fold also led to strong reduction of the total count of the most experimented bacterial strains. These results were more or less similar to the recoded data by Vanlmpe *et al.* (1966); McGucken & Boodside (1973); Hegna (1977); Band (1990); Davison *et al.* (1996) and Reem-Dosoky *et al.* (2000). Concerning the inorganic disinfectants, Tables (1 & 3) and Figures (1-4) showed that Biocide-30 and Sodium hypochlorite had less bactericidal effect on all tested organisms than that in case of organic compounds. Biocide-30 led to 99.99% inhibition on *Staphylococcus aureus, Salmonella dublin* and *Clostridium perfringens* within one-hour, while *Escherichia coli* was completely destructed with 100% inhibition within 30 minutes. On the other hand, Sodium hypochlorite revealed 99.99% inhibition on both *Staphylococcus aureus* and *Clostridium perfringens,* while *Escherichia coli* and *Salmonella dublin* were completely inhibited within one-hour. The obtained results were more or less similar to those recorded by Citron *et al* (1991); Eberhart *et al* (1983); Oliver *et al* (1989); Oliver *et al* (1991); Oliver *et al* (1993); Piriz *et al* (1990) and Tsai & Lin (1999). The achieved results illustrated in Tables (2 & 4) and Figures (5-8) showed that, TH4+ (1/200), Tek-Trol (1/256) and Formaline (5%) had a very strong fungicidal effect on all the tested mould and yeast strains, *Aspergillus flavus*, *Aspergillus fumigatus* and *Candida albicans* were completely inhibited within five minutes after treatment with the corresponding

concentrations of the experimented disinfectants. On the other hand *Aspergillus niger* showed weak or little resistance and elapsed 15 and 30 minutes to be completely killed by the recommended concentrations of TH4+ and Tek-Trol, respectively. These results were more or less similar to that obtained by Kramer (1983) and Sobih *et al* (1990). Although both the inorganic Biocide-30 and Sodium hypochlorite have weak bactericidal efficiency than other organic compounds but they had a moderately fungicidal effect as demonstrated in Tables (2 & 4) and Figures (5-8). All the tested fungi were completely destroyed by the recommended concentrations of tested inorganic disinfectants within time range of 15 to 60 minutes. *Candida albicans* was completely destructed after 5 minutes by Biocide-30 (1/300), while all of the tested Aspergilli were completely destroyed within range of 15-60 minutes. On the other hand, Sodium hypochlorite showed less fungicidal efficiency on *Aspergillus niger* which resisted for 60 minutes to be destroyed completely by the recommended concentration (100 p.p.m.), while *Aspergillus fumigatus* was the most sensitive to Sodium hypochlorite and was absolutely inhibited in 15 minutes and no spores could be detected in the subsequent test . Moreover, *Aspergillus flavus* and *Candida albicans* were completely inhibited by the recommended concentration of Sodium hypochlorite after 30 minutes.

The Quaternary Ammonium Compounds and Glutaraldhyde are widely used in the veterinary field as they are strong disinfectants, safe, non irritant and moderately affected by organic matter (Cox, 1995; Hoogerheide, 1945; Lawrence, 1950; McGucken & Boodside, 1973; Rubbo *et al.*, 1967 and Tuncan, 1993). The biocidal activity of Glutaraldhyde depends on either the availability of two free aldhyde groups in the molecule which react with the amino groups of the cell (Rubbo *et al.*, 1967) or the rapid and complete inhibition of DNA and RNA synthesis (McGucken & Boodside, 1973). Moreover, the Quaternary Ammonium Compounds in TH4+ produce intracellular changes after short periods of contact involving cytolytic damage resulting in leakage of the cell constituents into the suspending fluid (Cox, 1995 and Sainsbury & Sainsbury, 1982). These compounds are of high surface activity which are cationic by nature and with their surface absorption, the material is brought into more effective contact with the bacterial or fungal cell and consequently the local concentration increase around the cell (Hoogerheide, 1945). These compounds are split into ions when dissolved in water and these ions adhere to the surface giving a log lasting residual effect.

Table (1) : Effect of selected disinfectants on some tested bacterial strains.

Time factor/Tested strain	TH4+			Tek-Trol			Biocide-30			Sodium hypochlorite			Formaline		
	Disinfection concentration			*Disinfection concentration*			Disinfection concentration			*Disinfection concentration*			Disinfection concentration		
	1:100	1:200*	1:300	1:125	1:256*	1:500	1:300	1:400*	1:500	200ppm	100ppm*	50ppm	5%	1%*	0.5%
5 minutes:															
Staph. aureus	0.0	0.0	$2.3x10^6$	0.0	0.0	$4.3x10^7$	$4.3x10^9$	$8.4x10^9$	$9.2x10^9$	$1.2x10^3$	$5.8x10^6$	$4.7x10^8$	0.0	$2.2x10^5$	$3.4x10^7$
Escherichia coli	0.0	0.0	$4.3x10^5$	0.0	0.0	$6.2x10^6$	$1.4x10^6$	$2.3x10^6$	$4.7x10^8$	9.0x10	$2.1x10^2$	$3.5x10^9$	0.0	0.0	$4.8x10^5$
Salmonella dublin	0.0	0.0	$5.6x10^5$	0.0	0.0	$2.9x10^5$	$6.2x10^8$	$3.8x10^9$	$3.8x10^8$	$6.0x10^2$	$2.6x10^7$	$9.3x10^8$	0.0	0.0	$7.4x10^8$
Cl. perfringens	0.0	0.0	$1.8x10^4$	0.0	0.0	$2.6x10^4$	$6.3x10^3$	$5.2x10^3$	$6.4x10^4$	$6.2x10^2$	$4.8x10^4$	$1.0x10^5$	0.0	0.0	$3.3x10^3$
15 minutes:															
Staph. aureus	0.0	0.0	$8.5x10^4$	0.0	0.0	$2.8x10^5$	$4.5x10^7$	$6.8x10^7$	$8.2x10^9$	$3.8x10^2$	$1.7x10^4$	$3.5x10^6$	0.0	$1.3x10^2$	$2.8x10^4$
Escherichia coli	0.0	0.0	$2.1x10^4$	0.0	0.0	$3.5x10^4$	0.6x10	0.9x10	$3.5x10^8$	5.0x10	2.0x10	$1.6x10^7$	0.0	0.0	$1.2x10^5$
Salmonella dublin	0.0	0.0	$3.2x10^8$	0.0	0.0	$1.1x10^5$	$3.7x10^6$	$4.2x10^7$	$6.8x10^7$	4.6x10	$1.2x10^2$	$1.8x10^8$	0.0	0.0	$4.2x10^6$
Cl. perfringens	0.0	0.0	$6.1x10^2$	0.0	0.0	$5.2x10^3$	$2.8x10^2$	$1.1x10^3$	$2.3x10^4$	$2.1x10^2$	$3.5x10^2$	$2.3x10^4$	0.0	0.0	$1.8x10^2$
30 minutes:															
Staph. Aureus	0.0	0.0	$3.2x10^3$	0.0	0.0	$1.8x10^4$	$2.3x10^5$	$1.8x10^6$	$1.6x10^9$	1.4x10	$1.2x10^2$	$4.2x10^5$	0.0	0.0	$1.6x10^2$
Escherichia coli	0.0	0.0	$5.2x10^2$	0.0	0.0	$2.5x10^3$	0.0	0.0	$1.2x10^6$	0.0	0.6x10	$2.9x10^7$	0.0	0.0	$3.8x10^2$
Salmonella dublin	0.0	0.0	$1.8x10^2$	0.0	0.0	$3.8x10^3$	$4.4x10^5$	$1.3x10^7$	$1.3x10^7$	0.0	$0.3x10^2$	$6.6x10^6$	0.0	0.0	$1.9x10^2$
Cl. perfringens	0.0	0.0	$1.5x10^2$	0.0	0.0	$3.5x10^2$	$6.1x10^2$	8.4x10	$1.1x10^3$	1.9x10	$1.6x10^2$	$2.3x10^4$	0.0	0.0	$1.0x10^2$
60 minutes:															
Staph. Aureus	0.0	0.0	$1.1x10^2$	0.0	0.0	$3.8x10^2$	$1.8x10^2$	$4.2x10^3$	$5.2x10^6$	0.0	2.8x10	$6.3x10^4$	0.0	0.0	6.2x10
Escherichia coli	0.0	0.0	0.8x10	0.0	0.0	3.6x10	0.0	0.0	$8.3x10^3$	0.0	0.0	$8.2x10^4$	0.0	0.0	6.1x10
Salmonella dublin	0.0	0.0	0.0	0.0	0.0	2.1x10	3.3x10	$8.2x10^2$	$1.6x10^3$	0.0	0.0	$7.2x10^3$	0.0	0.0	3.2x10
Cl. perfringens	0.0	0.0	3.2x10	0.0	0.0	0.0	0.0	1.2x10	8.2x10	0.0	0.8x10	$2.8x10^2$	0.0	0.0	0.6x10

*** = Recommended concentration of the selected disinfected.**

Starting bacterial count:

- ***Staph. aureus*** **= $1x10^{10}$/ml**
- ***Escherichia Coli*** **= $2.7x10^{10}$/ml**
- ***Salmonella dublin*** **= $2.5x10^{10}$/ml**
- ***Cl. Perfringens*** **= $1.2x10^5$/ml**

Table (2) : Effect of selected disinfectants on some tested mould and yeast strains.

Time factor/ Tested strain	TH4+			Tek-Trol			Biocide-30			Sodium hypochlorite			Formaline		
	Disinfection concentration			*Disinfection concentration*			Disinfection concentration			*Disinfection concentration*			Disinfection concentration		
	1:100	1:200*	1:300	1:125	1:256*	1:500	1:300	1:400*	1:500	200 ppm	100 ppm*	50 ppm	5%	1%*	0.5%
5 minutes:															
Aspergillus flavus	0.0	0.0	$2.6x10^6$	0.0	0.0	$1.2x10^7$	6.2x10	$4.3x10^3$	$6.5x10^8$	$2.3x10^2$	$4.6x10^3$	$4.2x10^6$	0.0	$4.5x10^3$	$1.5x10^4$
Aspergillus fumigatus	0.0	0.0	$1.9x10^8$	0.0	0.0	$3.8x10^8$	$1.2x10^2$	$1.5x10^2$	$7.1x10^8$	4.1x10	$3.7x10^2$	$8.1x10^8$	0.0	$1.4x10^4$	$6.2x10^4$
Aspergillus niger	0.0	3.7x10	$1.2x10^9$	0.0	$5.4x10^2$	$6.3x10^8$	$8.5x10^3$	$1.8x10^3$	$1.0x10^9$	$5.3x10^3$	$4.8x10^4$	$2.6x10^9$	0.0	$3.6x10^4$	$1.8x10^5$
Candida albicans	0.0	0.0	$1.3x10^8$	0.0	0.0	$2.7x10^7$	0.0	$4.3x10^3$	$5.1x10^4$	4.5x10	$6.4x10^2$	$6.8x10^8$	0.0	0.0	$3.4x10^2$
15 minutes:															
Aspergillus flavus	0.0	0.0	$4.8x10^5$	0.0	0.0	$1.5x10^6$	0.0	0.4x10	$1.2x10^8$	1.2x10	$2.2x10^2$	$3.8x10^6$	0.0	0.0	$8.3x10^3$
Aspergillus fumigatus	0.0	0.0	$1.1x10^8$	0.0	0.0	$2.5x10^7$	0.4x10	1.0x10	$5.5x10^6$	0.0	0.0	$3.2x10^8$	0.0	1.6x10	$2.5x10^4$
Aspergillus niger	0.0	0.0	$3.6x10^8$	0.0	1.8x10	$8.2x10^7$	$6.1x10^2$	2.5x10	$4.5x10^7$	1.4x10	$1.8x10^2$	$1.6x10^8$	0.0	$2.1x10^2$	$2.6x10^4$
Candida albicans	0.0	0.0	$4.5x10^6$	0.0	0.0	$3.3x10^5$	0.0	0.0	$1.3x10^4$	0.0	$1.2x10^2$	$1.9x10^7$	0.0	0.0	1.8x10
30 minutes:															
Aspergillus flavus	0.0	0.0	$1.9x10^4$	0.0	0.0	$1.2x10^3$	0.0	0.0	$3.4x10^7$	0.0	0.0	$2.6x10^5$	0.0	0.0	$2.2x10^3$
Aspergillus fumigatus	0.0	0.0	$2.7x10^5$	0.0	0.0	$5.3x10^6$	0.0	0.0	$4.1x10^5$	0.0	0.0	$4.2x10^6$	0.0	0.0	$1.6x10^2$
Aspergillus niger	0.0	0.0	$7.2x10^5$	0.0	0.0	$1.4x10^6$	0.5x10	0.0	$2.2x10^7$	0.0	1.2x10	$4.5x10^7$	0.0	3.3x10	$1.8x10^2$
Candida albicans	0.0	0.0	$1.9x10^4$	0.0	0.0	$2.5x10^2$	0.0	0.0	$2.1x10^3$	0.0	0.0	$3.7x10^5$	0.0	0.0	0.0
60 minutes:															
Aspergillus flavus	0.0	0.0	$2.5x10^3$	0.0	0.0	$1.3x10^4$	0.0	0.0	$5.4x10^6$	0.0	0.0	$1.8x10^5$	0.0	0.0	1.8x10
Aspergillus fumigatus	0.0	0.0	$1.8x10^4$	0.0	0.0	$2.6x10^4$	0.0	0.0	$1.3x10^5$	0.0	0.0	$8.2x10^4$	0.0	0.0	0.4x10
Aspergillus niger	0.0	0.0	$6.8x10^4$	0.0	0.0	$8.1x10^3$	0.0	0.0	$1.5x10^6$	0.0	0.0	$3.2x10^5$	0.0	0.0	6.1x10
Candida albicans	0.0	0.0	$3.8x10^3$	0.0	0.0	0.0	0.0	0.0	$1.8x10^2$	0.0	0.0	$4.2x10^3$	0.0	0.0	0.0

*** = Recommended concentration of the selected disinfected.**

Starting mould and yeast count:

- *Aspergillus flavus* = $6.0x10^9$/ml **- *Aspergillus fumigatus* = $1.5x10^{10}$/ml**

- *Aspergillus niger* = $5.8x10^9$/ml **- *Candida albicans* = $2.4x10^{10}$/ml**

Table (3): Inhibitory percentages of selected disinfectants on tested bacterial strains

Bacterial strains	Time factor	Original count	TH4+ (1:200)		Tek-Trol (1:256)		Biocide-30 (1:400)		Sodium hypochlorite (100 p.p.m)		Formaline (5 %)	
			Count	Inhibitory (%)	Count	Inhibitory (%)	Count	Inhibitory (%)	Count	Inhibitory (%)	Count	Inhibitory (%)
Staph. aureus	5	$1x10^{10}$/ml	0.0	100	0.0	100	$8.4x10^{9}$	16.00	$5.8x10^{6}$	99.94	0.0	100
	15		0.0	100	0.0	100	$6.8x10^{7}$	99.32	$1.7x10^{4}$	99.96	0.0	100
	30		0.0	100	0.0	100	$1.8x10^{6}$	99.98	$1.2x10^{2}$	99.98	0.0	100
	60		0.0	100	0.0	100	$4.2x10^{3}$	99.99	2.8x10	99.99	0.0	100
Escherichia coli	5	$2.7x10^{10}$/ml	0.0	100	0.0	100	$2.3x10^{6}$	99.98	$2.1x10^{2}$	99.98	0.0	100
	15		0.0	100	0.0	100	0.9x10	99.99	2.0x10	99.99	0.0	100
	30		0.0	100	0.0	100	0.0	100.00	0.6x10	99.99	0.0	100
	60		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
Salmonella doublin	5	$2.5x10^{10}$/ml	0.0	100	0.0	100	$3.8x10^{9}$	84.51	$2.6x10^{7}$	99.89	0.0	100
	15		0.0	100	0.0	100	$4.2x10^{7}$	99.98	$1.2x10^{2}$	99.92	0.0	100
	30		0.0	100	0.0	100	$1.3x10^{7}$	99.99	$0.3x10^{2}$	99.99	0.0	100
	60		0.0	100	0.0	100	$8.2x10^{2}$	99.99	0.0	100.00	0.0	100
Cl. perfringens	5	$1.2x10^{5}$/ml	0.0	100	0.0	100	$5.2x10^{3}$	95.70	$4.8x10^{4}$	60.00	0.0	100
	15		0.0	100	0.0	100	$1.1x10^{3}$	99.10	$3.5x10^{2}$	99.70	0.0	100
	30		0.0	100	0.0	100	8.4x10	99.93	1.6x10	99.82	0.0	100
	60		0.0	100	0.0	100	1.2x10	99.99	0.8x10	99.99	0.0	100

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Table (4): Inhibitory percentages of selected disinfectants on tested mould and yeast strains

Mould and yeast strains	Time factor	Original count	TH4+ (1:200)		Tek-Trol (1:256)		Biocide-30 (1:400)		Sodium hypochlorite (100 p.p.m)		Formaline (5 %)	
			Count	Inhibitory (%)	Count	Inhibitory (%)	Count	Inhibitory (%)	Count	Inhibitory (%)	Count	Inhibitory (%)
Aspergillus flavus	5	$6x10^9$/ml	0.0	100	0.0	100	$4.3x10^3$	99.98	$4.6x10^3$	99.98	0.0	100
	15		0.0	100	0.0	100	0.4x10	99.99	$2.2x10^2$	99.99	0.0	100
	30		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
	60		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
Aspergillus fumigatus	5	$1.5x10^{10}$/ml	0.0	100	0.0	100	$1.5x10^2$	99.98	$3.7x10^2$	99.99	0.0	100
	15		0.0	100	0.0	100	1.0x10	99.98	0.0	100.00	0.0	100
	30		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
	60		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
Aspergillus niger	5	$5.8x10^9$/ml	3.7x10	99.99	$5.4x10^2$	100	$1.8x10^3$	99.98	$4.8x10^4$	93.10	0.0	100
	15		0.0	100	1.8x10	100	2.5x10	99.99	$1.8x10^2$	99.98	0.0	100
	30		0.0	100	0.0	100	0.0	100.00	1.2x10	99.99	0.0	100
	60		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
Candida albicans	5	$2.4x10^{10}$/ml	0.0	100	0.0	100	$4.3x10^3$	99.99	$6.4x10^2$	99.99	0.0	100
	15		0.0	100	0.0	100	0.0	100.00	$1.2x10^2$	99.99	0.0	100
	30		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100
	60		0.0	100	0.0	100	0.0	100.00	0.0	100.00	0.0	100

Fig. (5): Effect of the recommended Conc. of the disinfectants on *A. flavus*

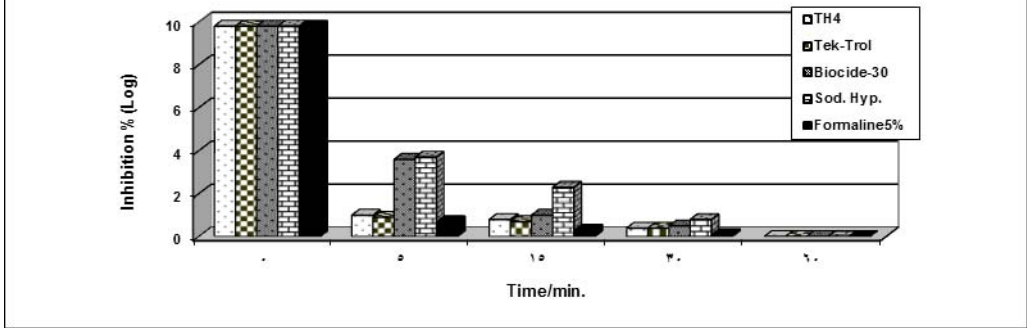


Fig. (6): Effect of the recommended Conc. of the disinfectants on *A. fumigatus*

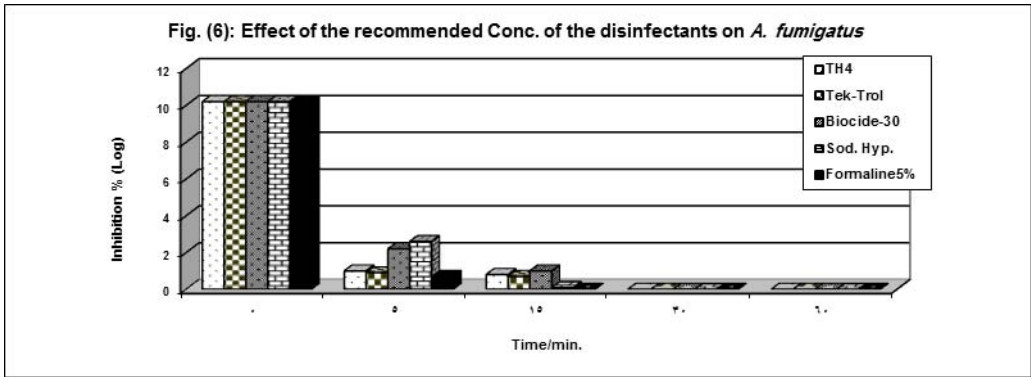


Fig. (7): Effect of the recommended Conc. of the disinfectants on *A. niger*

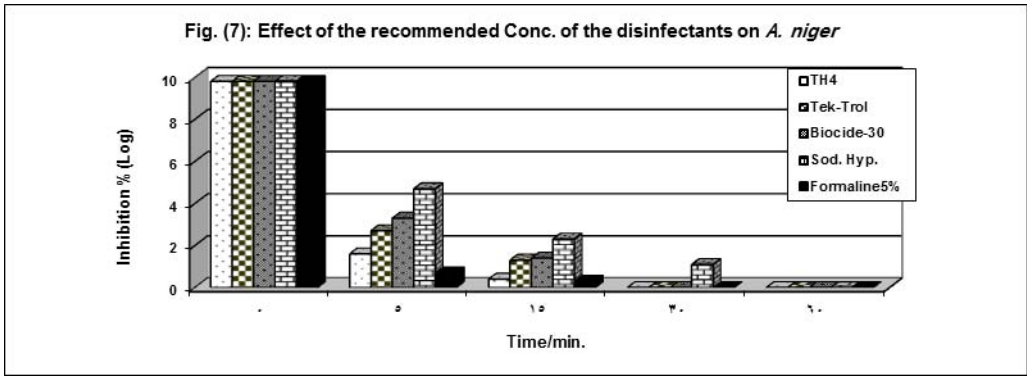
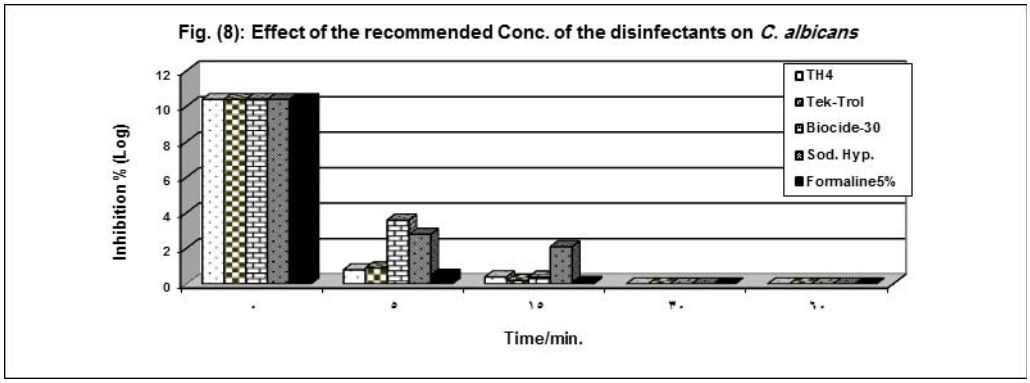


Fig. (8): Effect of the recommended Conc. of the disinfectants on *C. albicans*



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دراسة معملية لتأثير بعض المطهرات على بعض عترات ميكروبية ممرضة فى المجال البيطرى

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شملت هذه الدراسة تأثير خمسة أنواع مختلفة من المطهرات العضوية وغير العضوية واسعة الانتشار فى المجال البيطرى على أربعة أنواع من عترات بكتيرية (ميكروب مكور العنقود الذهبى، ميكروب الإشرشيا القولونى النموذجى، ميكروب السالمونيلا دبلين وميكروب الكولستريديوم ولش) وأربعة أنواع أخرى من الفطريات والخمائر (الأسبرجيلس فلافس، الأسبرجيلس فيوميجاتس ، الأسبرجيلس نيجر والكانديدا ألبيكان) والشائعة الانتشار فى مزارع الحيوانات والدواجن. وتم دراسة تأثير ثلاثة تركيزات مختلفة لكل نوع من المطهرات المختبرة (مركب تى أتش فور بلس، تكترول، بيوسيد ٣٠، هيبوكلوريت الصوديوم، الفورمالين).

وقد شملت التركيز الموصى به من الشركات المنتجة بالإضافة إلى تركيز أعلى وتركيز أدنى، وذلك لمعرفة تأثيرها المطهر على كل أنواع عترات الميكروبات المختبرة.

أظهرت نتائج البحث أن المطهرات العضوية كانت أقوى وأسرع فى تأثيرها على كل الميكروبات قيد التجربة سواء كانت بكتيرية أو فطرية أو خمائر وفى مدة زمنية أقل من التى أظهرتها تأثيرات المركبات غير العضوية. وقد أوضحت النتائج بأن كل المطهرات العضوية قد أدت إلى قتل معظم الميكروبات المختبرة سواء كانت بكتيرية أو فطرية أو خمائر خلال خمسة دقائق فقط فى حين أن المطهرات الغير عضوية كان تأثيرها التثبيطى على نفس الميكروبات بطيئاً وأقل كفاءة فى تأثيرها القاتل كما هو فى حالة المطهرات العضوية.

بناءً على ذلك فإنه يتم التوصية باستخدام المطهرات العضوية للتخلص أو القضاء على الميكروبات المرضية فى بيئة الحيوانات والدواجن لمنع التلوث وانتشار الأوبئة وعلى الأخص فى المزارع عالية الإنتاج حفاظاً على الثروة الحيوانية والداجنة .