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تأثير بعض المطهرات كمبيد للميكروبات القولونية فى المياه

جمال الدين العلمي ، حسن عيداروس ، أحمد البسيوني ، منى عشوب

يجب أن تكون المياه المستعملة للحيوان ومنتجاته خالية من مسببات الأمراض ،
حيث أن هذه النقطة لها علاقة قوية بصحة الانسان •

لذلك تم استخدام المطهرات لقتل مثل هذه الميكروبات فأثبتت الكلور فى تركيزات
١ ، ٢ ، ٣ فى المليون أنه المطهر المثالي للمياه حيث قتل الميكروبات القولونية فى
٣٠ دقيقة ، كذلك ايضا المركبات البودية غير أنها تغير من طعم ولون المياه •

بينما أثبتت التجارب عدم صلاحية برمنجانات البوتاسيوم لهذا الغرض •

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**GERMICIDAL POWER OF SOME DISINFECTANTS
AGAINST COLIFORM IN WATER**
(With One Table)

By
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SUMMARY

Chlorine in conc. of 1, 2, 3 P.P.M. proved to be the ideal germicide for sterilization of water against coliforms in 30 minutes.

Iodocor although having a good germicidal effect it imparts its colour and taste to water.

Potassium permanganate proved to be useless in the usual type of concentration as a germicide.

INTRODUCTION

One of the first requirments, in a drinking water for animals and birds is that at no time, should the supply be open to contamination by pathogenic infective agents.

Many of the health problems which confront animal and birds owners are caused by the presence of coliforms and E.coli e.g. calves diarrhoea (GLANTZ, et al. 1972), turkey osteomyelitis (NAIRN, 1973), rabbit diarrhoea (RICHARD, et al. 1985) and laying hens oophoritis, salpingitis and egg peritonitis (SHARMA and JOSHI, 1985).

E.coli type 1 were isolated from water samples by different authors (THOMAS, et al. 1954; ASHOUB and ATTIA, 1966 and ABD EL-KADER, 1983).

The aim of this work is to test the germicidal power of chlorine, iodophores and potassium permanganate against caliform contaminated water.

MATERIAL and METHODS

Source of water sample to be examined and treated in this work was taken from a driven well located and surrounded by animal houses in Moshtohor Faculty of Agriculture. The water before subjected treatment was tested bacteriologically and the M.P.N. of coliform content was 1100 per 100 ml. (W.H.O. 1985) and the milk test give a stormy reaction (ASHOUB and ATTIA, 1966).

The water was then treated with the following chemicals as follows:

1- Chlorine:

For chlorination of water bleaching powder 35% chlorine was used to give three different concentrations of 1 p.p.m., 2 p.p.m. and 3 p.p.m.

G.M. EL-OLEMY, et al.**2- Iodine compounds:**

Iodocor TM product of (SOCOOR SRL Milano Italy) was used to give a concentration of 1/2 ml, 1 ml. and 1.5 ml. per litre of water.

3- Potassium permanganate:

Was added to water from a stock solution to give the treated water a faint pink colour.

After the addition of disinfectants to water, the treated samples were tested bacteriologically after 30, 60 and 90 minutes to see the germicidal effect of the used disinfectants, against coliforms using MacConkey's and milk test as was formerly explained.

RESULTS

Results of germicidal power of disinfectants against coliforms.

DISCUSSION

From table (1) it is shown that chlorine supplied from calcium hypochlorite to give a final concentration of 1 p.p.m. and 2, 3 p.p.m. (superchlorination) killed the coliforms (1100 coliforms/100 ml. of the water sample) in a time of 30 minutes. The same results were obtained from iodocor in conc. of 1/2, and 1.5 ml/L. The well reputed potassium permanganate for its disinfection power for water failed to free water after 90 minutes exposure from coliforms.

The use of milk test in the testing of the three disinfectants proved to be a reliable field test for the changes which are caused in this media before treatment and the absence of such changes after applying the disinfectants.

In the use of the disinfectants one can surely say that chlorine is still the germicide of choice to free water from its contamination as it is cheap, available and can be used in minute concentrations without any harm to man, animals and poultry. Besides chlorine can lower water content of ammonia, nitrites and organic matter through their oxidation (W.H.O. 1984).

One of the benefits of chlorine its action as a harmless sanitizer through its residual content in water i.e. once dairy equipments are thoroughly cleaned and only immersed into water containing chlorine (2 or 3 p.p.m.), this will be sufficient to lower the bacterial contents or even to kill them, thus improving the keeping quality of milk in which such equipments are used.

Concerning iodine, organic compounds iodocor although it proved to have a good disinfecting power yet; it can not be used in water treatment as it imparts its smell and taste to such waters.

The results to such water obtained from this tests support the instantaneous giving up of the use of potassium permanganate as far as water disinfection. One can safely conclude that potassium permanganate proved to be useless in sterilization water and its use in this connection should be stopped.

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Table (1)
Water before adding disinfectants M.P.N. was 1100/100 ml. water sample

Disinfectants	Exposure time						
	30 min.		60 min.		90 min.		
	MacConkey's	Milk	MacConkey's	Milk	MacConkey's	Milk	
Hypochlorite	1 p.p.m.	-	Acid	-	Acid	-	No change
	2 p.p.m.	-	No change	-	No change	-	No. change
	3 p.p.m.	-	No change	-	No. change	-	No change
Iodocor	1/2 ml/L	-	-	-	-	-	-
	1 ml/L	-	-	-	-	-	-
	1 1/2 ml/L	-	-	-	-	-	-
Potassium permanganate added until water become faint pink colour.)	+	Stormy	+	Stormy	+	Stormy.