

(\*)

- -

12

336

)

14

.(

pH

%25

%33.42

( )

(\*)

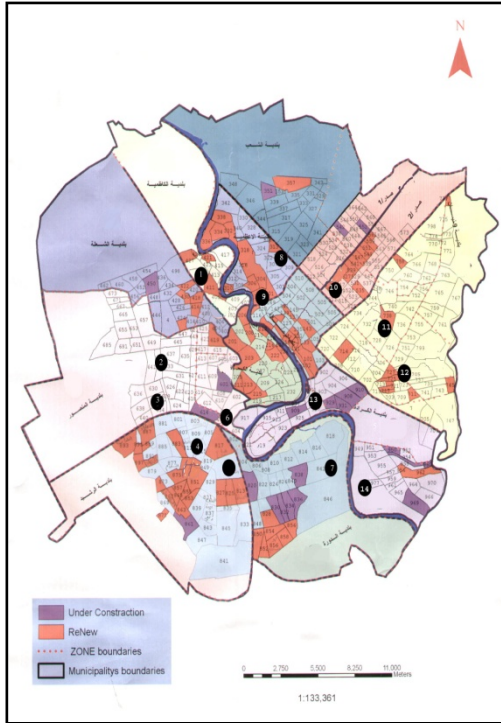
$\text{ل}^3$  1.900       $\text{ل}^3$  2.5  
 2.150       $\text{ل}^3$  0.656  
 $\text{ل}^3$  0.640       $\text{ل}^3$  1.510       $\text{ل}^3$   
 2002      ( )  
 (1) %67

(5).

(1) 8000      2300 -90  
 (23) 30      %60

$\text{ل}^3$  0.310      %50  
 (1) 2002       $\text{ل}^3$  0.131      1987

(3)  
 (23)%35 2008  
 .(3) 2006      %13 2005      %20



:  
 12  
 336  
 14  
 7  
 )  
 7 ( )  
 )  
 .(

250  
 0.2  
 %10  
 30 121

500  
 (12)  
 3-2

6  
 24

( )  
( ) ( )  
- ( )  
( )  
:  
(12)  
EC  
TDS  
(21)  
pH-meter (11) pH  
(12)  
(4)  
.Shimatzo  
:  
TC ABTC  
(12) MacConkey Agar Nutrient Agar  
FS FC  
(11) (MPN)  
EC Broth MacConkey Broth  
Azide Dextrose Broth  
*Pseudomonas aeruginosa*  
Pseudomonas Isolation Agar  
(9)  
(24) *Salmonella*  
(12).

p =

0.00000021

NTU (17.15 -1.1)

(1)

( )

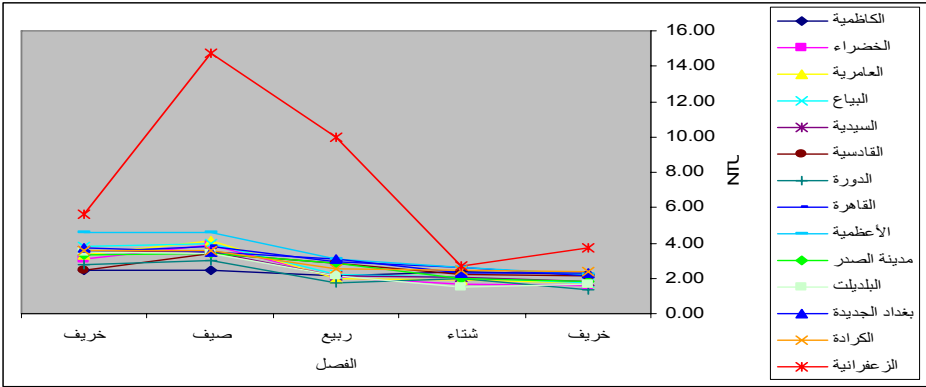
(7)

)

(14)

(

(5)



(NTU)

(1)

P=0.00000

EC

TDS

P=0.00000

pH

EC

TDS

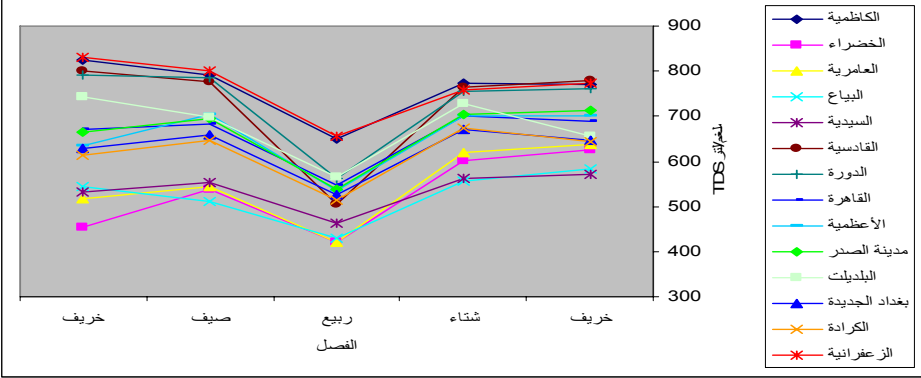
(22)

(3 2 )

(5)

(7)





( / )

:(3)

p = 0.0000

pH

8.14

6.43

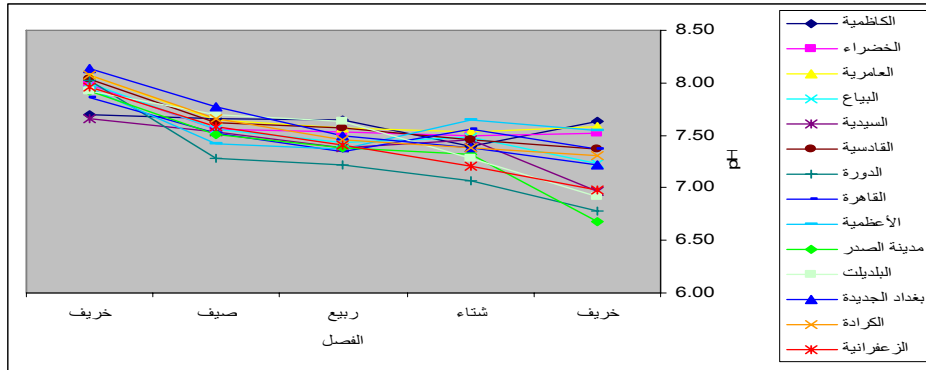
(28) pH

(4 ) ( )



(25)

( $p \leq 0.05$ )



pH

(4)

(15)

$p = 0.000$

/ (584.5 - 224.2)

(32)

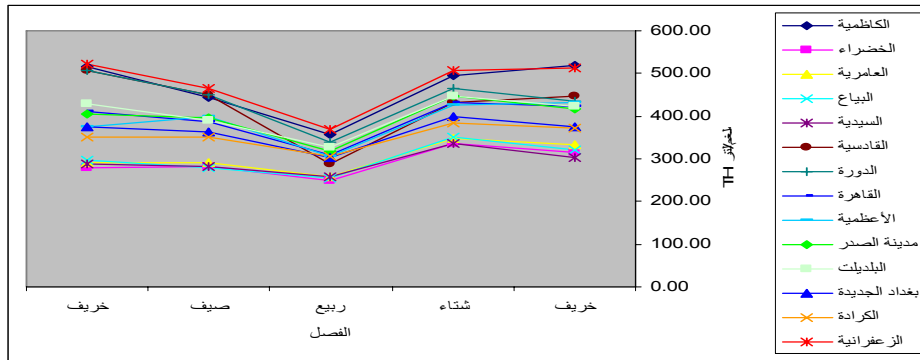
(7)

(29) (5)

( )

( )

( 0.551 ; 0.660 ; 0.828 = r )



( / ) TH

:(5)

:

p=0.000

/ 154.7

/ 56.1

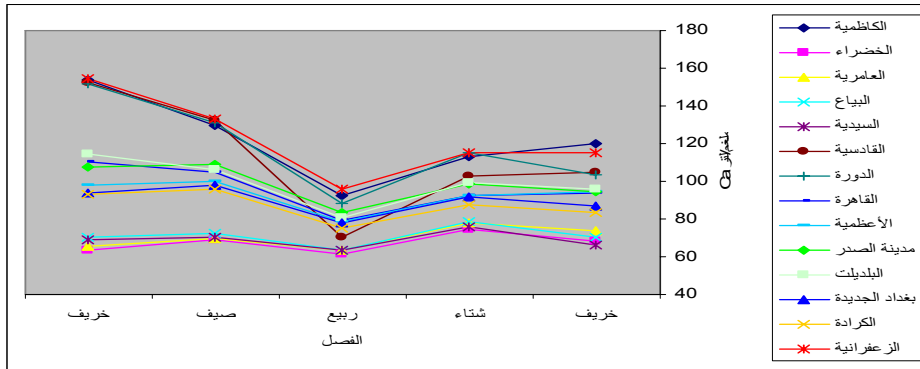
( )

)

(

(18)

(6 )



( / )

:(6)

:

$$p = 0.000$$

/ (56.4-20.4)

( - )

pH

( - )

(26)

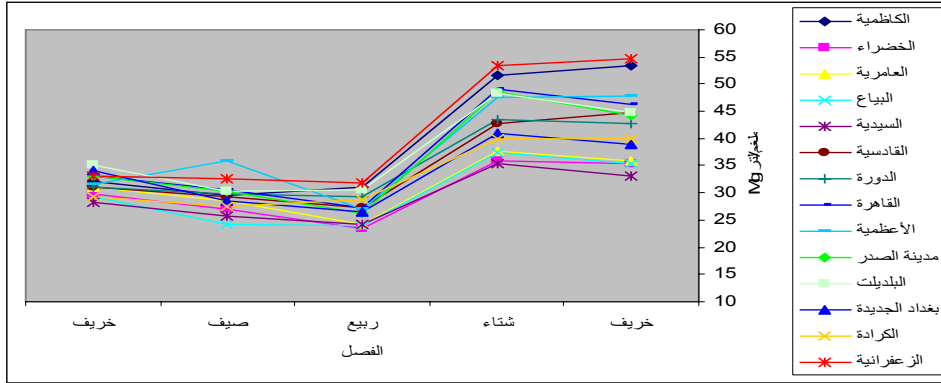
(7 )

.(29)

$$p = 0.0017$$

( )

(8).



( / )

(7):

p= 0.000

/ 170.2

/ 42.5

(6):

(33)

( )

(8 )

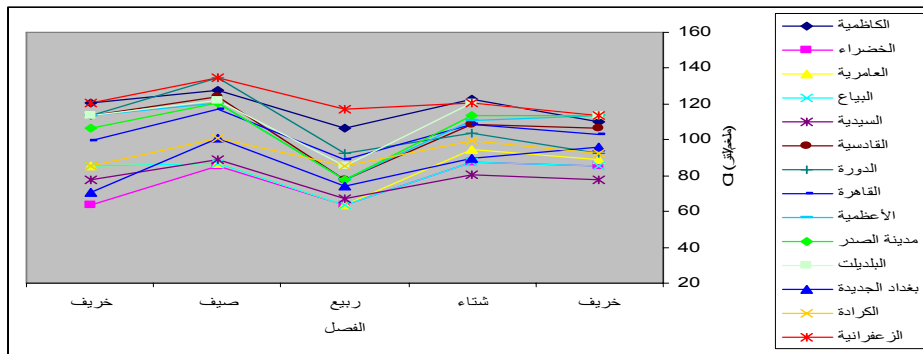
p = 0.000

)

(

%0.05

.(19)



( / )

:(8)

:

p =0.00000

( / 0.091-0.000)

( )

)

(  
(9 )

(2)

(34)

24

24

p = 0.999

0.01

417

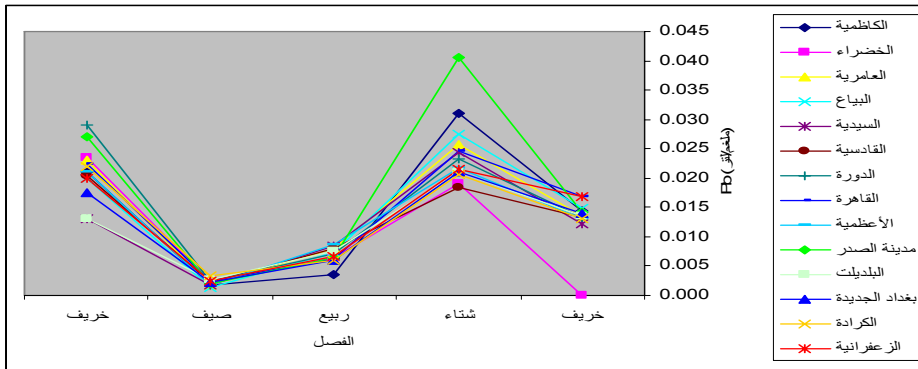
/

pH

%20 -%10

EPA

(13).



( / )

(9):

:ABTC

( - )

$$0.852 = r \quad \text{Abtc}$$

$$\text{ABTC}$$

) (10 )

(

(10)

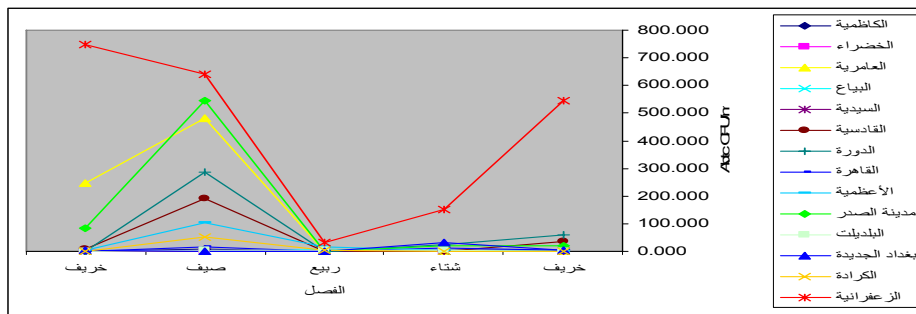
pH



$r = -0.603$  ABTC

(16).

(27).



(CFU/ml)

(10):

:TC

TC (11 )  
(799-0)

r = 0.985

pH r = 0.864 TC

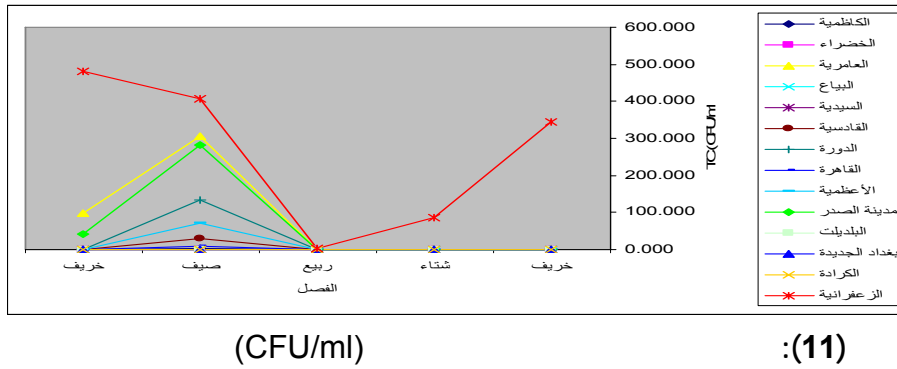
.(30)

p = 0.0001

TC

TC

.(16)



:(11)

: FC

(12 )

pH

(30)

TC ABTC

FC

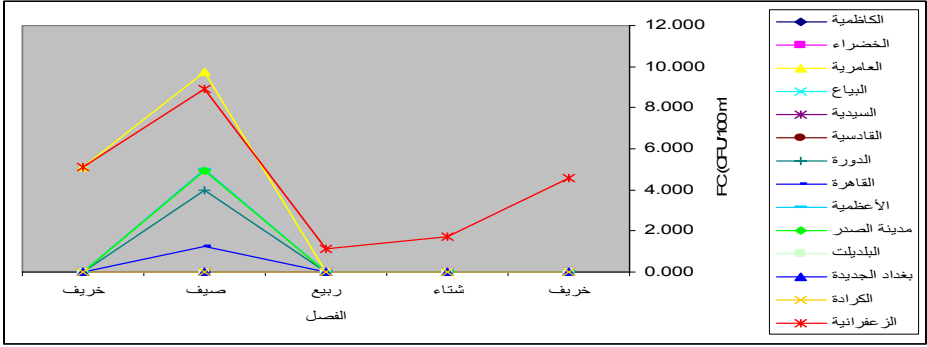
(0.891 ,0.978 ,0.969 = r)

-0.589 = r

FC

(17)

FC



(CFU/100m)

:(12)

:FS

FS

.(16) *E. coli*

p = 0.028

FS

CFU/100ml (9.2 – 0.0)

(13 )

(30)

(-568 = r)FS

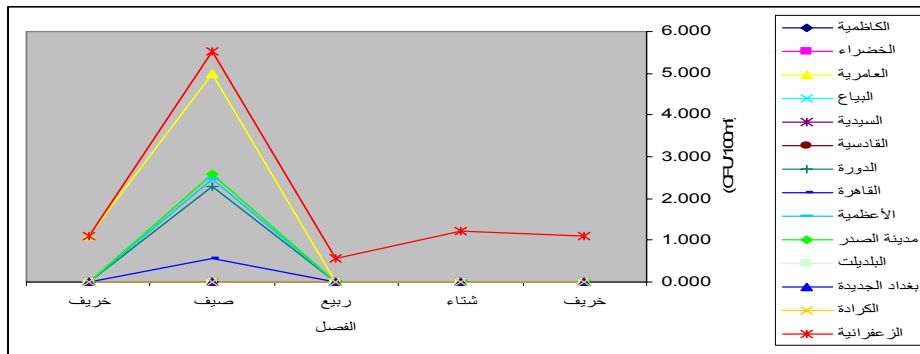
(p = 0.001)

FS

FS

FS :FC

(1.3 – 4.6)



(CFU/100ml)

:(13)

: *Pseudomonas aeruginosa*

Normal flora

(20)

10)

$p = 0.802$

( )

/ ( - 0

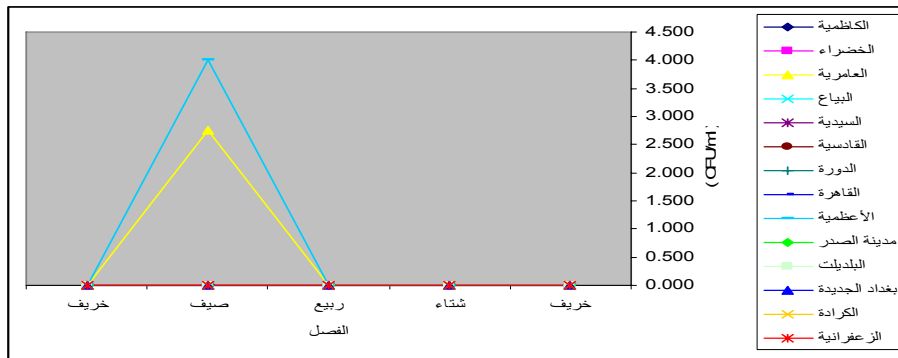
(14 )

$p=0.034$

r

FS , FC , TC, ABTC ,

0.867 0.851 0.772 0.861=



:(14)

: *Salmonella spp*

: 417

:

%35.42

2000 417

(1)

%16.37 %19.05

%4.17

%1.79

%33.93

%16.67

%17.26

%5.06

%4.76

%0.3

(5)

%1.79

pH

%0.60

%1.19

28

TH

%8.33

%3.87

%4.46

:

%25

( 2 )

%8.33

%16.67

%5.95

(

)

ABTC

%25

% 16.67

%8.33

%17

TC

%11.9

%5.36

%11

FC

%7.74

%3.27

%9

%6.55

%2.68





المجلة العراقية لبحوث السوق وحماية المستهلك مجلد (2) عدد (4) 2010.

**جدول (1): النسب المئوية للنماذج المخالفة للمعايير الفيزيوكيميائية الواردة في المواصفة القياسية العراقية رقم 417 لنماذج مياه الشرب قيد الدراسة.**

النسب السنوية للمناطق	الرصاص Pb		العسرة الكلية TH		رقم الهيدروجين pH		العكر Turbidity		المناطق	ت
	النسبة المئوية %لفشل	عدد النماذج الفاشلة	النسبة المئوية %لفشل	عدد النماذج الفاشلة	النسبة المئوية %لفشل	عدد النماذج الفاشلة	النسبة المئوية %لفشل	عدد النماذج الفاشلة		
%2.98	%2.98	10	%2.08	7	% 0.00	0	% 0.00	0	الكاظمية	1
%1.79	%1.79	6	%0.00	0	% 0.00	0	% 0.00	0	الخضراء	2
%2.38	%2.38	8	%0.00	0	% 0.00	0	% 0.00	0	العامرية	3
%2.38	%2.38	8	%0.00	0	% 0.00	0	% 0.30	1	البياع	4
%2.08	%2.38	8	%0.00	0	%0.60	2	% 0.00	0	السيدية	5
%2.38	%2.38	8	%0.89	3	% 0.00	0	% 0.00	0	القادسية	6
%2.38	%2.38	8	%1.49	5	%0.60	2	% 0.00	0	الدورة	7
%16.37	16.67%	56	%4.46	15	%1.19	4	% 0.30	1	المجموع	الكرخ
%2.38	%2.38	8	% 0.00	0	% 0.00	0	%0.00	0	القاهرة	8
%2.98	%2.98	10	% 0.00	0	% 0.00	0	%0.60	2	الأعظمية	9
%2.38	%2.38	8	% 0.00	0	% 0.00	0	%0.00	0	مدينة الصدر	10
%2.38	%2.38	8	% 0.00	0	% 0.00	0	%0.00	0	البلديت	11
%2.38	%2.38	8	% 0.00	0	% 0.00	0	%0.00	0	بغداد الجديدة	12
%2.38	%2.38	8	% 0.00	0	% 0.00	0	%0.00	0	الكرادة	13
%4.17	%2.38	8	%3.87	13	%0.60	2	%4.17	14	الزعفرانية	14
%19.05	%17.26	58	%3.87	13	%0.60	2	%4.76	16	المجموع	لرصافة
%35.42	%33.93	114	%8.33	28	%1.79	6	%5.06	17	المجموع الكلي	
				%16.37						النسبة المئوية لفشل نماذج مياه الشرب في مناطق الكرخ
				%19.05						النسبة المئوية لفشل نماذج مياه الشرب في مناطق الرصافة
				%35.42						النسبة المئوية الكلية لفشل نماذج مياه الشرب من الأحياء السكنية قيد الدراسة

المجلة العراقية لبحوث السوق وحماية المستهلك مجلد (2) عدد (4) 2010.

جدول (2): النسب المئوية النماذج المخالفة لبعض المعايير الصحية الواردة في المواصفة القياسية العراقية رقم 417 لنماذج مياه الشرب قيد الدراسة.

النسب السنوية للمناطق	بكتيريا الزائفة الزنجارية		بكتيريا المسببات البرازية FS		بكتيريا القولون البرازية FC		العدد الكلي لبكتيريا القولون		العدد الكلي للبكتيريا الهوائية		المناطق	ت
	النسبة المئوية	عدد النماذج	النسبة المئوية	عدد النماذج	النسبة المئوية	عدد النماذج	النسبة المئوية	عدد النماذج	النسبة المئوية	عدد النماذج		
	% للفشل	الفاشلة	% للفشل	الفاشلة	% للفشل	الفاشلة	% للفشل	الفاشلة	% للفشل	الفاشلة		
%0.60	%0.00	0	%0.00	0	%0.00	0	%0.60	2	%0.60	2	الكاظمية	1
%0.00	%0.00	0	%0.00	0	%0.00	0	%0.00	0	%0.00	0	الخصراء	2
%2.98	%1.19	4	%2.08	7	%2.68	9	%2.98	10	%2.98	10	العامرية	3
%0.00	%0.00	0	%0.00	0	%0.00	0	%0.00	0	%0.00	0	البياع	4
%0.00	%0.00	0	%0.00	0	%0.00	0	%0.00	0	%0.00	0	السيدية	5
%1.79	%0.00	0	%0.00	0	%0.00	0	%1.19	4	%1.79	6	القادسية	6
%2.98	%0.00	0	%0.60	2	%0.60	2	%0.60	2	%2.98	10	الدورة	7
%8.33	%1.19	4	%2.68	9	%3.27	11	%5.36	18	%8.33	28	المجموع	الكرخ
%1.79	%0.00	0	%0.60	2	%0.60	2	%1.19	4	%1.79	6	القاهرة	8
%2.98	%0.89	3	%1.49	5	%1.79	6	%2.38	8	%2.98	10	الأعظمية	9
%4.17	%0.00	0	%0.89	3	%1.19	4	%3.57	12	%4.17	14	مدينة الصدر	10
%0.00	%0.00	0	%0.00	0	%0.00	0	%0.00	0	%0.00	0	البدلييت	11
%0.60	%0.00	0	%0.00	0	%0.00	0	%0.00	0	%0.60	2	بغداد الجديدة	12
%1.19	%0.00	0	%0.00	0	%0.00	0	%0.00	0	%1.19	4	الكرادة	13
%5.95	%0.00	0	%3.57	12	%4.17	14	%4.76	16	%5.95	20	الزعفرانية	14
%16.67	%0.89	3	%6.55	22	%7.74	26	%11.90	40	%16.67	56	المجموع	الرصافة
%25	%2	7	%9	31	%11	37	%17	58	%25	84	المجموع الكلي	
					%8.33							
					%16.67							
					%25.00							

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## Comparative study about the safety of drinking water supplies in Baghdad City

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### Abstract

The monthly and seasonal averages of physiochemical and microbial properties of 336 drinking water samples collected from 14 sections in Baghdad city include (Al-Kadimiya, Al-Kadraa, Al-Ameriya, Al-Bayaa, Al-Saydiya, Al-Qadisiya, Al-Doora, Al-Qahera, Al-Aadamiya, Madenat Al-Sader, Al-Baladiyat, Baghdad Al-Jadeeda, Al-Karada and Al-Zaafaraniya) for 12 months were studied. The studied properties include the averages and concentrations of turbidity, pH, electrical conductivity, total dissolved solids, total hardness, calcium, magnesium, chloride, lead, aerobic bacterial total count, total and fecal coliform, fecal streptococci, *Pseudomonas aeruginosa*, and detection of *Salmonella*. The results clarified the failing of 25% samples in the application of the sanitary demands stated in the confirmed Iraqi standards that essentially referred to aerobic bacterial total count, and the failing of 33.42% samples in the application of physiochemical demands which essentially referred to lead concentrations. The samples from Al-Zaafaraniya station recorded the highest averages of the studied properties; while the samples from Al-Kadraa, Al-Bayaa, Al-Saydiya recorded the lowest averages. This study discussed the effects of seasons and maintenance measures on the studied properties. The correlations among the physiochemical and microbial properties.

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\* Part of M.Sc. thesis for the first author.