

*Pseudomonas*

*aeruginosa*

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/

\*

*Pseudomonas aeruginosa*

( )

Atomic Absorption Spectrophotometer

Flame Atomic Absorption Technique

Cold Vapour Technique

	2	%100	
30	%33.5		37
37		2	%100
		10	%60.5

**Laboratory Detoxification of Lead and Mercury Elements by  
Using *Pseudomonas aeruginosa***

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**Abstract**

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The present study was conducted to determine the capability of decreasing high concentrations of lead and mercury, in a laboratory experiment, via precipitation using *Pseudomonas aeruginosa*.

Lead and mercury concentrations were measured using flame atomic absorption technique to determine lead concentration before and after cultivation by bacteria, and using cold vapour technique to determine mercury concentrations before and after cultivation by bacteria respectively.

The results clarified high percentage of lead precipitation, as the maximum percentage of lead precipitation was 100% at the concentration of 2 ppm after 7 days of incubation period at 37° c, and the minimum percentage of lead precipitation was 33.5% at the concentration of 30 ppm after 7 days of incubation. Besides, *P. aeruginosa* has exerted a high percentage of mercury precipitation, since the maximum percentage of mercury precipitation was 100% at the concentration of 2 ppm after 7 days of incubation at 37° c while minimum percentage of mercury precipitation was 60.5% at the concentration 10 ppm after 7 days of incubation.

(1997) (2001) ( )  
3 / 5 Heavy metals  
Trace metal  
(1987) (1000) (% 0.1)  
(1988) ( )  
(1997 Goyer)  
(1999b) (Benoit) .

)

. ( 1995

( 1986 Hellowell )

Microsomal mono-oxygenase

Reverse mutation

. ( 1975 Ames ) Cancer

inert

( 1995 Bloom ; 1993 Bloom )

. ( 1998 Branfireun )

mineral

mining

processing

. ( 1998 Brierley Brierley )

Crist )

1994

Brady 1993 Gadd 1990 Brierley 1988

. ( 2000 Bruins 1999 Brombacher

*Pseudomonase*

3000

( Dimethyl disulfide ) DMDS

( 1998 Branfireun )

*P. putida* . *P. fluorescens*

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Wagner – Dobler ( 2000 Iwahori )  
*P. putida* ( 2000 )  
*Pseudomonase sp.*  
( 1992 ) Savvaidis ( 1992 Azad Cooksey )  
*Pseudomonas aeruginosa*  
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❖  
.  
❖  
. *Pseudomonas aeruginosa*

**( Nutrient broth )**

autoclave 6.8 *Pseudomonas aeruginosa*  
20 ° 2 / 1.5 ° 121

*Pseudomonas aeruginosa* nutrient broth

(II) Pb(NO<sub>3</sub>)<sub>2</sub>  
10 0 30 0 HgCl<sub>2</sub>  
( 1975 APHA )  
1994 Milne David )  
. ( 2002 Mathias

( 1994 ) NIOSH ( 1975 ) APHA

:

											*
			1000	Pb <sup>+2</sup>							.1
			1.5	Pb (NO <sub>3</sub> ) <sub>2</sub>						1.5985	
									1		
											.2
0				(		1000)					
										30 26 22 18 14 10 6 2	
											*
	1.3535		1000	Hg <sup>+2</sup>							.1
			50	HgCl <sub>2</sub> (II)							
									1		
	20	%25	Sncl <sub>2</sub>								.2
											.3
6 4 2 0				(		1000)					
											10 8
				:							
											(1994 NIOSH 1975 APHA)
1000											
6 2 0				nutrient							
			°37								30 26 22 18 14 10
Flame Atomic											
											Absorption Spectrophotometer Technique
	283.3										(HCL)Hallow cathode lamp
0.3			–								6
AA – 630 – O <sub>2</sub>				AtomicAbsorption/FlameEmissionSpectrophotometer							
											.Japan – Shimadzu
											. Pseudomonas aeruginosa



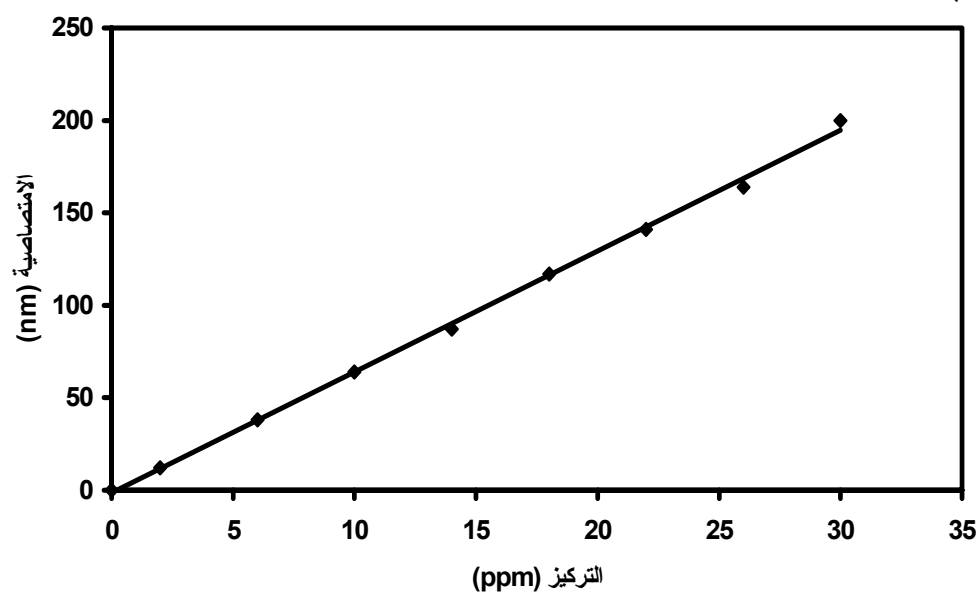
*Pseudomonas aeruginosa*

100 ×

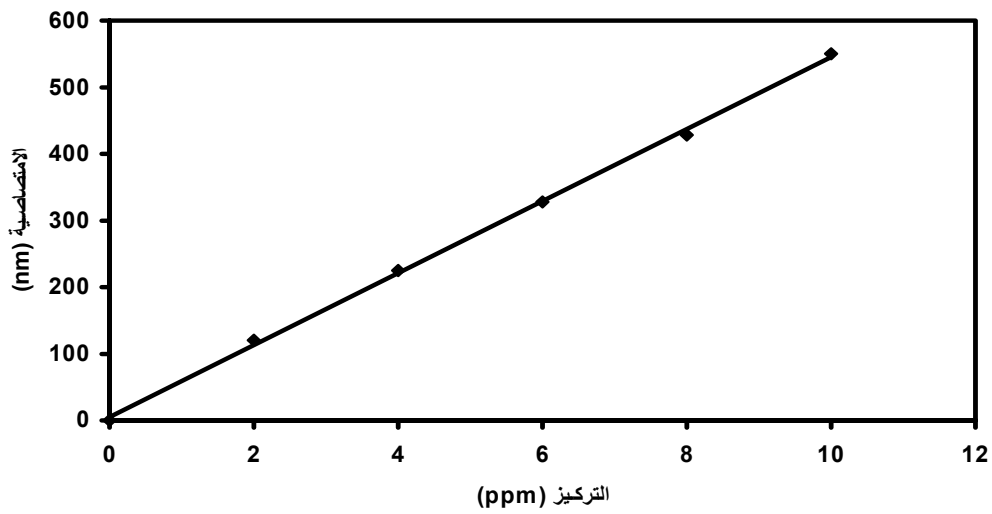
$$\frac{\text{---}}{\text{---}} =$$

:

(2 1)



(1)

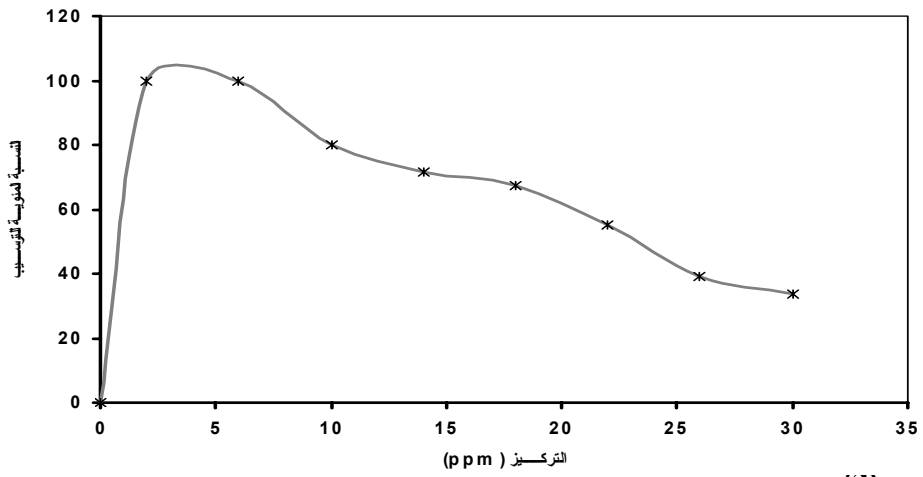


(2)

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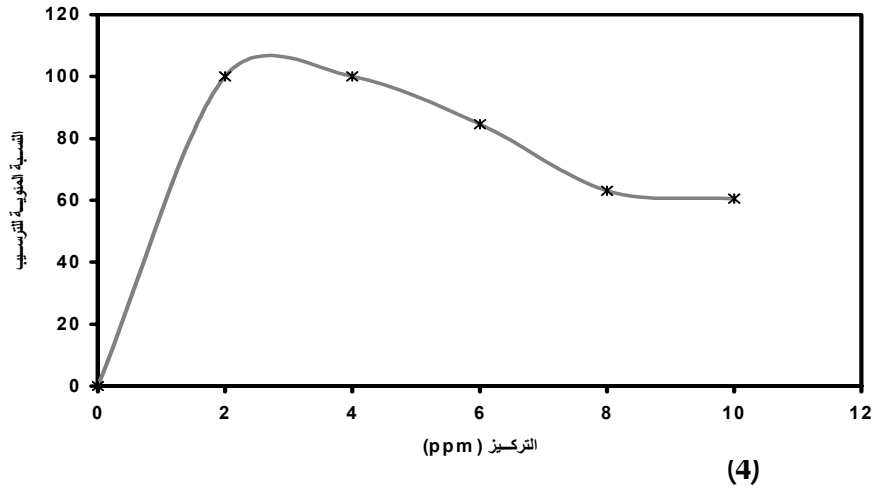
( 3 4 ) .

*Pseudomonas aeruginosa*



(3)





:

6 2 0

30 26 18.22 14 10

%100

%33.5

2

30

10 8 6 4 2 0

2

%100

10

%60.5

Electro

. ( 1990 Remacle)

Static Attraction

. ( 1993 Tobin Avery )

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( 1995 Pirszel)

. ( 1990 Volesky )

( 1995 Leita )

( 1992) Gadd .

. ( )

Blumenroth 1996

Xie 1995 Holan Volesky)

( 2000 Brombacher 2001

( )

.( 1997 Al-Kafaji)

Xie )

. ( 1996

( ) . ( 1988 )

. ( . . . . ) .

( 1997)

118 .

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. ( 2001 )

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