Reduction of Selenium by *Pseudomonas stutzeri* Nt-I: Growth, Reduction and Kinetics

Introduction

S , c 1818, a a a c a c . I
a a a , b c a ,
a a (S O_4^{2-}, S (VI)), b (S O_3^{2-}, S (IV)),
a (S ^{0}, S (0)) a a (S
, ac a a c a a
c c a a b 2 10

$^{-4}$ a 6.2 10^{-3} M a
[3]. Wa a Sa F a c c Ba
(USA) c a a c c a ab 50-
300 . L^{-1} [4]. a a a a Ja a
c a .a 20 /0 (aT2 a La (-US)/MCID 48 DC 0.124 5.2 C 5ca4a 5ID 48 603 00 M .)0.6(L)]TJEMC /S a La -ca4 US)/MC

$$P = \frac{\ln OD_{600} - \ln OD_{600 t_0}}{t - t_0}$$

=S c c a , $^{-1}$; = , ; OD_{600}: Ab ba c c a 600 .

Batch experiments conducted with washed cell suspensions:

F c a c
a a : bac a a ç a b a a
bac a c a TSA a a ç a 20 L
TSB a 100 L b ca a c
b a ac ç ba 24
a 37 C. Ş b 10 L a a a a 100 L
TSB a 250 L E a a ç a a
8 c a b c a (6 000 , 15
, a) a a ca a
(0.85% / NaC a), a a
50 L c -MSM (a 5 L^{-1} NaC). a OD_{600} a
ab 1.5, a bac a a a.
50 L a c a b b
100 L b , ac c a 15 L a c
. A a 5 L 4 M a c
a a b a a c c a
1 M a a a c (a
20 L). a c a c a a a
a a $_0$. a c a b
NT-I a a a a ,
H a c a a c
a 16 a b a ac a
c a a ac a c a
a a bac a c , a a a
c a ac a .

F c ba c bac a a ç a b
a a bac a c a TSA a a ç a
20 L TSB a 100 L b ca
a c . W a ac ç ba 24
a 37 C. Ş b 10 L a a a a 100 L
TSB a 250 L E a a ç a 8 .
c a b c a (6 000 , 15 , ,
a) a a ca a ,
c a 30 L MSM a c ,
c a a $Na_2S O_4$ (H 8, c 10 L^{-1}).
a b a (b 20 40 L^{-1}).
c ba (0.5 M S a , 37 C,
H 8) a a : 100 L a c a 30 L a
c a ca c a a
a ç ba a 37 C c a a a a
a 120 . A 1 L a a a a
a a 1.5 L c b . ac a a
b c a (6 000 , 15 , a).
a a b a ca a
a a 25 L a a (W a a
42, S a A c , S A ca). 5 L a a a
c c c b b .

Analytical methods

Optical density: a a c c a ca (OD$_{600}$) c a a 600 . b a c a MSM c a bac a.

OD$_{600}$ vs. dry biomass:

$$\frac{dS_e^0}{X dt} = \frac{k_{max\,40}[S_e^4]}{K_{s40} + [S_e^4]}$$

V@å•]¦[b^&c ¸æ• ˘˘}å^å à^ c@^ W}åç^¦•åc^ [- P¦^c[¦åæ, Ù[˘c@ A-¦å&æ.

1. L^}: M, L^}• PNL (2009) V@^ ^••^}cåæ| c[¢å}: c@^ &@æ}*å}*]^¦&^]cå[} [- selenium in environmental sciences. The Science of The Total Environment 407: 3620-3633.

2. L^{¦^ AD (2004) A˘˘æcå& •^¦^}å˘{][||˘cå[} å• æ *¦[åæ| ^}çå¦[} {^}cæ| •æ-^c^ å••˘^. E&[c[¢å&[||[*ˆ æ}å E}çå¦[} {^}cæ| Ùæ-^cˆ 59: 44-56.

3. L^}: M, Xæ} H˘||^à˘•&@ ED, H[{^• G, C[¦çå}å PFÝ, L^}• PNL (2008) Ù^|^}æc^ ¦^{[çæ| å} {^c@æ}[*^}å& æ}å •¦-æc^-¦^å˘&å}* ˘]'[¸ æ}æ^¦[àå& •|˘å*^ à^å ¦^æ&c[¦•. Yæc^¦ R^•^æ¦&@ 42: 2184-2194.

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6. Y˘¦ L (2004) R^çå^¸ [- 15 ^^æ¦• [-¦^•^æ¦&@ [} ^&[c[¢å&[||[*ˆ æ}å ¦^{^åååæcå[} [- |æ}å &[]cæ{å}åc^å à^ æ*¦å&˘|c˘¦æ| å|åæå}æ*^ •^åå{^}c ¦å&@ å} •^|^}å˘˘{. E&[c[¢å&[||[*ˆ æ}å E}çå¦[} {^}cæ| Ùæ-^cˆ 57: 257-269.

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9. Y[¦|å H^æ|c@ O¦*å}å:æcå[} (2011) G˘åå^|å}^• -[¦ D¦å}\å}* Yæc^¦.

10. D˘}*æ RÙ, F¦æ}\^}à^¦*^¦ YV (1999) Må&¦[àåæ| Væ}•-[¦{æcå[}• [- Ù^|^}å˘{ æ}å c@^ Bå[¦^{^åååæcå[} [-Ù^|^}å-^¦[˘• E}çå¦[}{^}c•. Bå[¦^{^åååæcå[} J[˘¦}æ| 3: 171-188.

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16. H˘}c^¦ YJ, Mæ}c^¦ DK (2011) sp. Nov.: A •^|^|}åc^ ¦^å˘&å}*]¦[c^¦àæ&c^¦åæ å•[|æc^å -¦[{ •[å]. C˘¦¦^}c Må&¦[àå[||[*ˆ 62: 565-569.

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