

Pectobacterium

(1) (1)

)
%2.91 ()
2006 2005 55 .%5.59
22

Pectobacterium
Pectobacterium carotovorum subsp. 7
Pectobacterium atrosepticum 6 *carotovorum*
6 (*Pectobacterium chrysanthemi*) *Dickeya chrysanthemi*
Pectobacterium .

Pectobacterium :

30621 . . (1)

Identification of *Pectobacterium* Bacteria Causing Soft Rot on Garlic Plant in Syria

M. Abu-ghorrah⁽¹⁾ and M. Mansour⁽¹⁾

ABSTRACT

Symptoms of soft rot showed in some fields cultivated with garlic crop in the Kissweh region (Damascus countryside). Studying this disease, found that the incidence rates ranging between 2.91% to 5.59%. 55 bacterial isolates were isolated from infected samples collected during the seasons 2005 and 2006. The results of five biochemical tests showed that 22 isolates were pectinolytic and they were pathogenic to garlic plant and gave symptoms similar to those observed in the field, these isolates were classified as belonging to the genus *Pectobacterium*. To determine the species of the bacteria, they have been characterized towards nine biochemical tests, which allowed the classification of 7 isolates as *Pectobacterium carotovorum* subsp. *carotovorum*, 6 isolates belonged to *Pectobacterium atrosepticum*, one isolate to *Dickeya chrysanthemi* (*Pectobacterium chrysanthemi*), 6 isolates have not been classified and 2 isolate did not characterized. These results have shown for the first time the isolation and identification of the *Pectobacterium* bacteria causing soft rot on garlic crop in Syria.

Key words: Garlic, Soft rot, Bacteria, *Pectobacterium*.

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Allium sativum

(Schwartz and Mohan, 1995; Rabinowitch and Currah, 2002)

Bradbury

: (1986)

Erwinia carotovora subsp. *carotovora*, *Pseudomonas siccata*,
Pseudomonas xanthochlora and *Pseudomonas marginalis* pv. *Marginalis*.

Pseudomonas fluorescens (1979) Samson

Girard J.C.

Barakat .Reunion (1994)

(1985)

Erwinia carotovora *Bacillus pumillus* *B. subtilis*

(1994) Girard

Pseudomonas fuscovaginea

15 (2002) Gardan L. .

(DNA / DNA hybridization) DNA / DNA

Marie

Pseudomonas salomonii sp. Nov.

Pseudomonas salomonii. (2009) agnes

(2009) Bin Li .

Pseudomonas fluorescens

28227 (3650) 2009

.(2009)

(2000 Al-Safadi 2003 2009)

: -1

.() -
2-1
2006 2005

.100 × 4 / 4 :
() : - 2

%70

5
15
(50)
7) YPGA
1000 15 7 7
72 ° 25 (7.2 pH

15 5 3 3) PYDAC
(pH7 1000 40
° 25 48
24 20 ° 120
° 4

: - 3

cfu / 107 6
24 ()
5

:
-0
-1
-2
-3
-4
4-3-2
.1 0
:
- 4

Suslow *et al.*,)
(Hugh and Leifson, 1953) / (1982
(Lelliot *et al.*, 1966) (Kovacs, 1956)
(De Boer *et al.*, 2000 ; Schaad,1988)

)
37 : (Aeroby anaeroby facultative
(Lecithinase) (S.R.S.)
(Nacl 5%) °
(De Boer *et al.*, 2000 ; Schaad,1988)

- 1

(1 2 3)



(1)



(3)



(2)

: -2

%5.59 2.91 (1)
%15

(2000) Marie-Agnès
Pseudomonas

Midi-Pyrénées %30-20 *fluorescens*
.1990
(1)

.2006-2005

	/	
3.84	1.2	1
5.59	1.7	2
2.91	1	3
3.56	1.5	4

: - 3

55

(2)

%40 22

%34.55 19

8

14.55

6

%11

Pseudomonas

Pseudomonas fluorescens (1979) Samson R

(2009)

Bin Li

Pseudomonas fluorescens

(2)

%							
40	-	-	+		-	22	M7.2, M10.2, M13.1, M13.2, M30, M34.2, M35.1, M36.1, M40.2, M42.2, M43.2, M44, M45.1, M46.4, M50.3, N27.2, N31.1, N32.1, N33.1, N34.2, N36.2, N36.3
34.55	-	-	-		-	19	M8.3, M9.1, M9.2, M9.3, M10.1, M11.1, M33.1, M34.1, M40.1, M42.1, M45.2, M46.3, M50.2, M53.2, N26.1, N27.1, N30.1, N33.1, N36.1,
14.55	-	-	-		-	8	M7.1, M8.1, M11.2, M49.2, M50.1, M53.1, N25.1, N34.1
11	+	-	-		-	6	M43.1, M46.1, M46.2, M49.1,, N25.2, N33.1,

19

22)

%74

(

(19)

Brenner)

Pectobacterium

(*et al.*, 2004

(3)

Pectobacterium

7

De Boer *et al.*, 2000 ; Schaad,1988) *carotovorum* psubs. *carotovorum* (Brenner *et al.*, 2004

Nacl .%5
(Girard J.C. *et al.*, 1994) *Erwinia carorovora*
Pectobacterium carotovorum psubs. *Carotovorum*
6 (Bull *et al.*, 2010; Brenner *et al.*, 2004)
Pectobacterium atrosepticum
37
.Nacl 5%
Peltzer, s. and K. sivasithamparam. 1985)
(Perombelon, M. C. M.1992
(Bradbury, 1986)
(2006 ;2000)
Bull *et al.*,) *Dickeya chrysanthemi* (M43.2)
Brenner *et al.*,) *Pectobacterium chrysanthemi* (2010
:
(2004
Nacl %5
Bradbury,) . 37
6 .(1986

(1985) Barakat
Caubel and Samson,)
(1984
(1994) Girard
Pseudomonas fuscovaginea
Girard (1979) Samson
Pseudomonas fluorescens (2009) Bin Li (1994)

(3)

	37	Nacl 5%									
P.c.c	+	+	-	-	-	+	-	-	-	7	M7.2, M13.1, M34.2, N32.1, M36.1, M42.2, M50.3
P.a	-	+	-	-	-	+	-	+	+	6	M35.1, M44, N27.2, N36.3 M45.1, M46.4
.ch D	+	+	+	+	+	-	-	-	-	1	M43.2
N.I	+	+	-	-	+	-	+	-	-	1	N34.2
N.I	-	+	-	-	-	+	+	-	-	1	N36.2
N.I	-	+	-	-	-	+	+	+	-	1	M10.2
N.I	-	+	-	-	-	+	+	+	-	2	M13.2, M40.2
N.I		+	-	-	+	-	+	-	+	1	N31.1
										2	M30, M33.1

Pectobacterium atrosepticum :P.a ؛ *Pectobacterium carotovorum subsp. Carotovorum* :P.c.c

Dickeya chrysanthemi :P.ch. :N.I غير معرفة

:

- 4

(22)

3.6 – 2

(4)

		3	2	1	
+	2.3	1	3	3	M7.2
+	2	1	2	3	M10.2
+	2.3	2	3	2	M13.1
+	2.3	1	3	3	M13.2
+	2	1	2	3	M30
+	3	3	1	2	M34.2
+	2.3	1	3	3	M35.1
+	2.6	2	3	3	M36.1
+	2.6	1	3	4	M40.2
+	2.3	2	3	2	M42.2
+	3.6	3	4	4	M43.2
+	3	3	2	4	M44
+	2.6	2	3	3	M45.1
+	3	3	3	3	M46.4
+	2.3	2	3	2	M50.3
+	2.3	3	2	2	N27.2
+	2.3	3	1	2	N31.1
+	2.3	1	3	3	N32.1
+	2	1	2	3	N33.1
+	2.6	2	3	3	N34.2
+	2.3	3	1	3	N36.2
+	2.3	2	3	2	N36.3
-	0.3	1	0	0	

0 1 =

2 ≤

REFERENCES

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26 -22 - /
- (2009) .
(2009-2000) 2009
.72 .
- (2009) .
- (2003) .
. 153-170 :(18)
(2009) .
/
- .35-26 :27
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