

:(SLCV)

5 4 3 2 1

2007/2006 2006/2005
 (SLCV)
 .SYR-C2 JOR-C1
 (SLCV)
 (SLCV)
 (PCR) (DNA)
 (SLCV-2 SLCV-1)
 . bp 1100
 %95 %99 (Accession no.DQ285019.1) Cairo %95
 %94 %98 (Accession no. EF532620) M
 (SLCV) :

Brunt)

et al., 1990; Lecoq et al., 1981; Lisa and
 (Lecoq, 1984

) *Cucurbita pepo* L.

(*Cucurbitaceae*)

2005 Al-Musa, 1989) %55
 .(2009 2005

Lovisolò,)

(1980

Squash

(ZYMV)

Begomovirus SLCV) leaf curl virus
 (*Geminiviridae*)

Al-Musa et) %69 %95
 (al., 2008

%22.91 2006/2005 2005/2004

.2010/6/14

2009/5/5

SLCV-E) (2009) %43.78
 Lazarowitz, 1991;) SLCV-R
 .(Lazarowitz and Lazdins, 1991 (SLCV)
 SLCV-EG Cohen *et al.*, 1983; Flock) 1977
 .(Idris *et al.*, 2006 (and Mayhew, 1981
 Malva (SLCV) Lazarowitz and Lazdins,)
 .(Al-Musa *et al.*, 2008) SLCV-Malva .(1991; Xei and Zhou, 2003; Revill *et al.*, 2003
 (SLCV)
 (ssDNA)
 DNA-B DNA-A .(Brown *et al.*, 2002)
 DNA-B 2600 (SLCV)
 Timmermans *et al.*,) DNA-A (DNA)
Geminiviruses (1994
 :
 (monopartite genome) *Mastrevirus*
Maize streak virus
 monopartite) *Curtovirus* (MSV)
 (genome (Biotype B)
Beet curly top virus .(Costa and Brown, 1991)
 monopartite) *Topocuvirus* (BCTV)
 (genome (Biotype B Biotype A) *Bemisia tabaci*
Tomato pseudo-
Begomovirus curly top virus (ToPCTV)
 (bipartite genomes) Polston *et al.*, 1989; Cohen)
 (et al., 1983; Varma and Malathi, 2003
 Flock and)
 .(Mayhew, 1981
 B A (bipartite genomes) *Begomovirus*
 (SLCV)
Bean golden mosaic
Begomovirus BGMV) *virus*
 (Geminiviridae)
 .(Fauquet *et al.*, 2003) *Nicotiana benthamiana* SLCV-R SLCV-E
Begomovirus Brown, 1994; Lazarowitz,)
 DNA-A (1991; Polston *et al.*, 1989

...

DNA-B (monopartite genome)
Tomato yellow leaf
 (TYLCV) *curl virus*
 (CLCuV) *Cotton leaf curl virus*
Tomato leaf curl virus
 .(Fauquet *et al.*, 2003)(ToLCV)

7.0 (0.01M)

SLCV) *Squash leaf curl virus*
 .(Geminiviridae *Bigeminivirus*

ELISA) Florilab
 405 (Reader
 (SLCV)

(DNA)

6 (DNA)
 micro-CTAB
 (Doyle and Doyle, 1987) -1
 0.5 (57)

2 ()
 CTAB 750 ()
 °60
 °60 (SLCV)
 750 30 (2006/2005 2005/2004)
 (Chloroform-Isomyl -)
 (1:24)

10000 (centrifuge) ()
) 10 °4
 ()
 500 1.5
 (1:24) (-) °20-

13000
 1 10 -2
 (96% cold ethanol)

(DNA) (ELISA) ()
 . 30 °20- .(Clark and Adams, 1977)

(10X buffer) (DNA)
 25 (Nuclease-Free Water) (pellet) (%70) 1
 13000
 PTC-100 Programmable) (PCR) (DNA) 5
 (Thermal Controller 100
 Thermal) : 35 (10 mM Tris, 1 mM EDTA) TE
 °95 (Denaturation 15 °60 (DNA)
 (Annealing) DNA
 (Extension) °50 (DNA)
 °72 (DNA)
 °72 5 Spectrophotometer S2100 Diode Array)
 (Biowave WPA
Electrophoresis) (and Staining (DNA)
 DNA nm 280/260
 1.5) 10 mM TRIS, 1 mM) TE
 Tris 0.605 g, Boric acid :TBE 100 (TE 67.5µl DNA 7.5µl) 10:1 (EDTA
 0.5X 0.2555 g, EDTA 0.185 g
 4 µg)
 .(DNA/µl
PCR
 + DNA 5) TBE X0.5 : (SLCV)
 (Phenol Blue 1 5'-ATTACCGGATGGCCGC-3': prAV2644
 DNA) 5'-CTGAACCTCAAAGTCTGGACG-3':prAC1154
 (Ladder: 100bp The Midland Certified Reagent)
 //(Company
 60-30 100 1100 bp
 (DNA) (DNA-A)
 Idris *et al.*, 2006; Idris and)
 Gel) .(Brown, 1998
 (Documentation System 2 25
 (UV) TE) (DNA)
 25 25 mM MgCl₂ 10 mM dNTP (DNA)
 Taq DNA)
 DNA 50 (Polymerase

...

(SLCV) (Sequencing) (DNA)

(DNA)

(SLCV)

Macrogen Service (Center

(JOR-C1) (DNA) (DNA sequencing) ()

(SYR-C2) (SLCV)

(ELISA) (SLCV) (Alignment) (DNA)

(SLCV)

405 (1) 1.990 1.035 .Genebank

(SLCV)

405 (SLCV) .1

.260/ 280 nm (DNA)

(DNA)	(DNA) 260 /280nm	(ELISA)			
0.276	1.882	1.430	/	19/12/2006	*JOR-C1 1
0.356	1.658	1.119	/	10/7/2006	**SYR-C2 2
0.267	1.766	1.990	/	18/12/2006	JOR-C3 3
0.244	1.760	1.035	/	29/6/2005	SYR-C5 4
0.259	1.665	1.745	/	19/12/2006	JOR-C6 5
0.256	1.770	1.689	/	29/6/2005	SYR-C8 6

*SYR: Syria Sample **JOR: Jordan Sample

(Spectrophotometer)
1.882 1.658 nm 280/260
(0.356µg/µl) (0.244 µg/µl) (DNA)
.1

(DNA Isolation)

(DNA)
(SLCV)
(DNA) ()
(Spectrophotometer)

SYR-C6 1.762 nm 280/260
JOR-C1 2.003

Sequence)

(0.198µg/µl) (DNA)
(.0.396µg/µl)

(Analysis

PCR

DNA) (DNA) ()
(Sequencing
(SYR-C2 JOR-C1) (SLCV)
(2) (Alignment)
()

prAC1154 prAV2644
(SLCV)
(1) bp1100

(DNA)
(SLCV)
%95

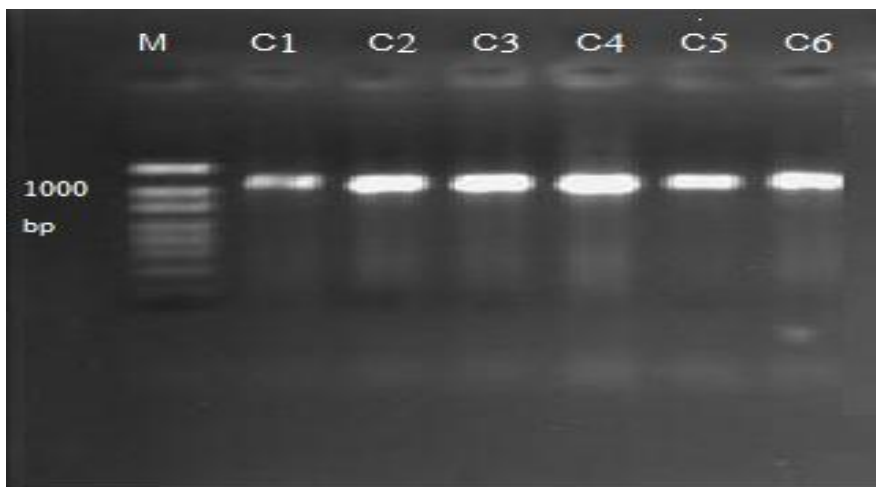
(DNA-A) (DNA)
(SLCV)

(Accession no.DQ285019.1) Cairo
%94 %98 %95 %99
(Accession no. EF532620) M
(2)

(entire viral coat protein Cp)

(.SLCV)
()

(DNA)



.1
(PCR)
(SLCV)
(100 bp)

1: JOR-C1, 2: SYR-C2, 3: JOR-C3, 4: JOR-C4, 5: SYR-C5, 6: JOR-C6, M: Ladder 100bp.

Genebank	(SLCV)		(DNA-A)	
	DQ285019.1	EF532620	JOR-C1	SYR-C2
DQ285019.1	100	98	95	99
EF532620			94	98
JOR-C1 GQ273921			100	95
SYR-C2 GQ273922				100

:SYR-C2 :JOR-C1 (SLCV-EG) :DQ285019.1 (SLCV-Malva) :EF532620

%95 (A

%95 %99 (SLCV-EG) (SLCV)

(SLCV-Malva)

Al-Musa *et al.*,) (%98)

.(2008 (SLCV)

(SLCV)

(SLCV-E)

Antignus *et al.*,)

Polston *et al.*,) SLCV-R

1989; Lazarowitz, 1991; Lazarowitz and

.(Idris *et al.*, 2006) (2003

.(Lazdins, 1991

(SLCV)

Begomovirus

(SLCV)

(*Bemisia tabaci*)

(DNA-A)

DNA-)

(SLCV)

: (1)23

2009

.6-1

2005

.(2)5

.112-84 : (2) 7

2005

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Molecular Characterization of Two (SLCV) Isolates: One from the Jordan Valley and the Other from Southern Syria

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ABSTRACT

This study was conducted during the growing seasons 2005/2006 and 2006/2007 in order to distinguish by molecular methods between 2 isolates of (SLCV) isolated one from Southern Syria and the other from the Jordan Valley referred to hereafter as SYR-C2 and JOR-C1 for Syrian and Jordanian isolates, respectively. The study provides the first report of SLCV in Syria and extends information about the relatedness with the Jordanian isolate and other isolates in the region. The (SLCV) virus appeared in recent years in the two countries as a serious disease, causing big losses of squash crops, especially in the Jordan Valley. PCR amplifications were performed by using a pair of oligonucleotide primers (SLCV-1 and SLCV-2) specific for coat protein region. The respective band was about 1100bp in size. Results of DNA sequencing showed a similar arrangement of DNA nucleotides of the Syrian and Jordanian isolates in about 95%, as well as a similar arrangement with the Egyptian isolate Cairo (Accession no.DQ285019.1) in about 99% and 95%, respectively and with the Jordanian M (Accession no. EF532620) isolate in about 98% and 94%, respectively. The virus (SLCV) is transmitted by the white fly (*Bemisia tabaci*) and is one of the important viruses detected in the region causing significant economic losses, especially when plants contracted the disease at an early stage of their growth.

Keywords: SLCV isolates, Southern Syria, Jordan Valley, Squash viruses.

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Received on 5/5/2009 and Accepted for Publication on 14/6/2010.