

***Pisum sativum* L.**  
***Rhizoctonia solani***

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2010 / 10 / 06

2010 / 04 / 14

**Abstract**

Callus was stimulated from leaves explants of pea seedlings on agar solidified MS medium containing 1.5 mg/L of BA and 2.0 mg/L NAA. Selection of tolerant callus culture virulent strain of *Rhizoctonia solani* by using the concentration of 12.0 % from callus culture added to it the concentrations of 0.0, 4.0, 8.0, 12.0, 16.0 % of fungal filtrates. Treating callus of using concentrations (10, 10<sup>2</sup>, 10<sup>3</sup> and 10<sup>4</sup>) µm from salicylic acid over periods (4, 8, 12 and 24) hours followed by callus treated with concentration 12% of filterat fungus for 15 days showed gradual increase in acquiring the callus of brown colour which is compatible to concentrations of salicylic acid in medium and period of treatment. It was also noticed that the best activity of Phenylalanine Ammonia-Lyase and concentration proline was in callus extraction treated with 10<sup>4</sup>µm salicylic acid for 24 hours by using concentration of 12%.

MS

.NAA / 2.0 BA / 1.5

%12 *Rhizoctonia solani*

. % 16.0 12.0 8.0 4.0 0.0

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24 12 8 4 (10<sup>4</sup> 10<sup>3</sup> 10<sup>2</sup> 10)

15 %12

10<sup>4</sup>

. %12 24

Fabaceae

*Pisum sativum* L.

*Rhizoctonia solani*

(1)

Salicylic acid ethylene Jasmonic acid

SA .(2) (SA)

Phenylalanine Ammonia-Lyase

(PAL)

Structural Acquired Resistance (SAR)

.(4 3)

(5)

.(9)

(8)

(7)

(6)

*Pythium*

(10)

*R.solani*

*R.solani*

SA

.(11)

.(12) PAL

*R.solani*

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	<i>Rhizoctonia solani</i>				
	/	/			
	(PSA)	-	-		.(13)
			.(Slant)	PSA	° 10 -
15					
	(14)		%3		2.0
PSA				/	10
	(15)				5
				/ 5	50
			. 30		
	.(16)				
	(17)		(Paker medium)		
		/ 50	250		
7	PSA		<sup>2</sup> 0.5		
		° 2 ± 27			.
			. 15		
	20	g12000	° 4	(MSE. High speed	18)
Millipore filter					(0.22 μm)
15					
/	2.0 + BA	/	1.5	(18) MS	
	. 35 - 30				.(19) NAA

*R.solani*

(20)

: % 16.0 12.0 8.0 4.0 0.0  
 NAA / 2.0 + BA / 1.5 + MS  
 . / 25 9 . °50 - 45  
 30 10  
 °2 ± 25 / 0.2  
 1500 8 / 16)  
 .( 20

10<sup>4</sup> 10<sup>3</sup> 10<sup>2</sup> 10 SA  
 5.8  
 10 . 25 9 ° 50  
 3 / 0.2 30  
 25 100 . (24 12 8 4)  
 %12  
 .(21) 15

2 1  
 . (Homogenizer, LABSCO – R 25) pH 7.0  
 3000 (Heraeus chrest GMBH, Cryofuge 6.4) Ultracentrifuge  
 ° 4 5 /  
 .(22)

Phenylalanine Ammonia - lyase (PAL)



.(23) 290

(24) %12

Sulfo Salicylic acid 15 0.5

Ninhydrin %3

520

.(CECIL 1021 Violet &Visible Spectrophotometer)

*R. solani*

% 14

% 23

% 8

*R. solani*

% 8 4

(1 )

%12

%16

%12

% 8 4

%16

...

MS <i>Rhizoctonia solani</i> : (1)					
. 20 ( / ) <i>Pisum sativum</i> L.					
%					*
( )					
16.0	12.0	8.0	4.0	0.0	( )
0.467	0.795	0.886	0.844	1.26	0.830

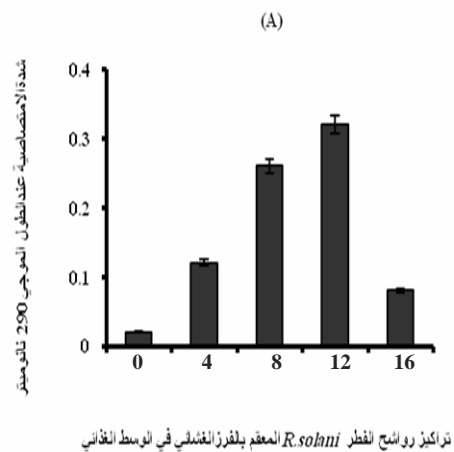
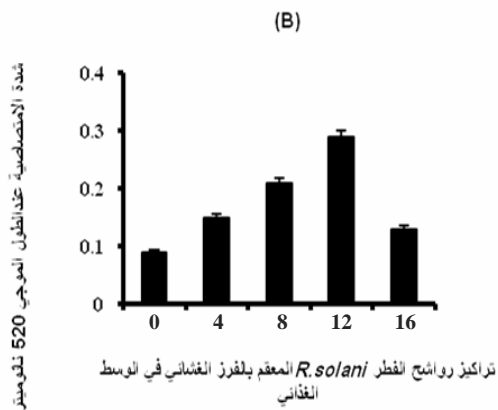
. 5

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*F. solani* (26 25)  
*R. solani* (27)  
 (22)  
 .(28) *F. oxysporum*

*R. solani*

(A-1) PAL  
 290  
 %12  
 . %16  
 (B-1)  
 520  
 . %12



(B)

(A)PAL

:(1)

*Rhizoctonia solani*

PAL

(31) PAL

(30, 29)

Trans-cinnamic acid

Phenylalanine

.(31, 30)

(34)

(33)

(32)

.(35)

*R.solani*

SA

SA

SA

(21).

(PAL)

SA

%12

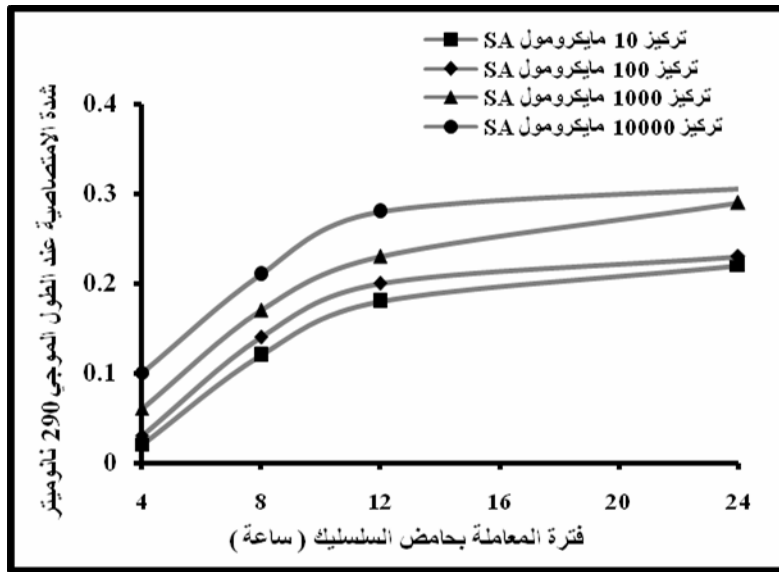
PAL

(2 )

SA

$10^4$

24



%12 SA

:(2)

. PAL

PAL

(12)

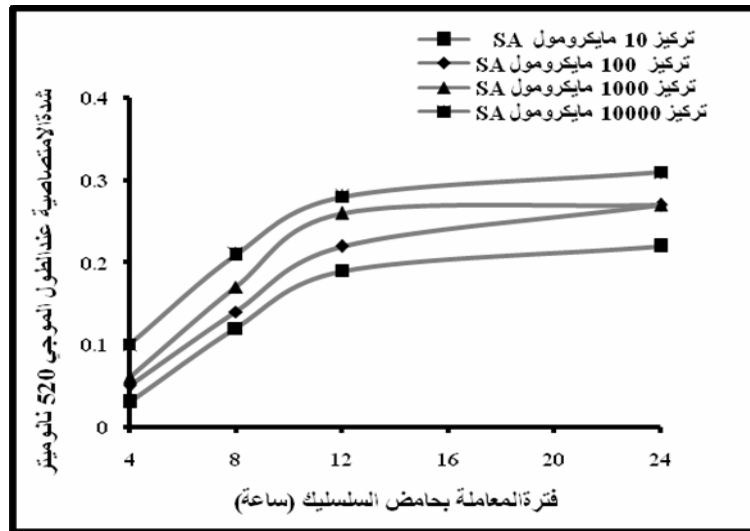
.(4 3)

.(36) (21)



. (3)

SA



%12

SA

: (3)

SA

(38)

(37)

.(39)

*R. solani*

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