

**DIVERSITY OF *SCLEROTIUM ROLFSII*
ISOLATES INFECTING SOME
OIL CROPS**

By

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B.Sc. Agric. Sc. (Plant Pathology), Ain Shams University, 2003

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ABSTRACT

Huda Zakaria Ahmed: Diversity of *Sclerotium rolfsii* isolates infecting some oil crops. Unpublished M.Sc. Thesis, Department of Plant Pathology, Faculty of Agriculture, Ain Shams University, 2010.

The fungus *Sclerotium rolfsii* Sacc. causes severe root rot to peanut and sunflower plants, pathogenicity tests of *S. rolfsii* 21 isolates on peanut were realized. All isolates from different hosts affect peanut plants, with different degrees. Pathogenicity tests of 21 isolates of *S. rolfsii* on peanut (Giza 6) and sunflower (hybrid 109) were carried out. All isolates from different hosts and locations were pathogenic to peanut and sunflower. Mycelial growth on natural media was higher than that on synthetic media. The best mycelial growth was obtained on PDA and Br media. For sclerotial formation, isolates varied in the number production on different media according to the type of media and isolate. The highest mycelial growth was recorded at 30°C and the least was recorded at 15°C. While, there was no clear differences found between isolates grew on different carbon sources, a great variation was obtained on sclerotia formation on media amended with different carbon sources. Peptone as a nitrogen source was the best for growing *S.rolfsii* isolates while medium consisted of sodium nitrate gave the lowest growth. Total of 441 combinations only 76 isolates (17.2%) showed compatible reactions. Based on mycelial compatibility seven groups were identified among the different isolates. MCG 7 was a unique group consist only one isolate isolated from guar plant. There was no correlation between host, geographic locations and members in certain MCG. The genetic relationships among 12 isolates of *S. rolfsii* showed various reactions by using 4 primers. High degree of genetic similarity was obtained between isolates P2 and P6 isolated from peanut from Giza and Behira when using the three primers1, 2 and 3. These two isolates were also compatible and gave the same trend of disease incidence. Isolates from the same host showed variability in their genetic characters. The isolates were varied in their ability to produce oxalic acid. Isolate P3 produced the highest

amount of oxalic acid, (150µg/mg), also, this isolate was the high virulence one. *Trichoderma harzianum* was the best bioagent used inhibiting mycelial growth and sclerotia formation *in vitro*. Comparing with two bioagents and two fungicides (Moncut and Rizolex T) in controlling the disease, fungicides were more effective in suppressing the disease incidence (pre-emergence damping off). All treatments completely suppressed the disease in post-emergence damping off.

Key words: *Sclerotium rolfsii*, rot root, mycelial compatible group, random amplified polymorphic DNA markers, biological control, and chemical control

CONTENT

LIST OF TABLES.....	II
LIST OF FIGURES.....	III
LIST OF ABBREVIATIONS.....	V
I. INTRODUCTION	1
II. REVIEW OF LITERATURE.....	3
III. MATERIALS AND METHODS.....	25
IV. RESULTS.....	36
1. Symptoms on oil crops.....	36
2. Isolation and identification of <i>Sclerotium rolfsii</i>	36
3. Variation in virulence among isolates of <i>Sclerotium rolfsii</i>	38
3.1.Pathogenicity of <i>Sclerotium rolfsii</i> isolates on peanut plant.....	38
3.2. Pathogenicity of <i>S. rolfsii</i> isolates on sunflower plant.....	40
4. Characterization of <i>S. rolfsii</i> isolates.....	42
4.1. Morphological characterization of <i>S. rolfsii</i> isolates among different media.....	42
4.1.1.Variation among <i>S. rolfsii</i> isolates on natural media.....	42
4.1.2.Variation among <i>S.rolfsii</i> isolates on synthetic media	48
4.2. Variation of <i>S.rolfsii</i> isolates among different temperature degrees.....	53
4.3. Variation of <i>S. rolfsii</i> isolates among different carbon sources.....	57
4.4. Variation of <i>S. rolfsii</i> isolates among different nitrogen sources...	60
5. Mycelial compatibility grouping.....	63
6. Random Amplified Polymorphic DNA markers (RAPD).....	68
7. Variation of <i>S. rolfsii</i> isolates among oxalic acid production.....	82
8. Variation of <i>S. rolfsii</i> isolates among different bioagents	83
8.1. <i>In vitro</i>	83
8.2. <i>In vivo</i>	86
V. DISCUSSION.....	87
VI. SUMMARY.....	103
VII. REFERENCES.....	108
ARABIC SUMMRY	

LIST OF TABLES

No.		Page
1.	Sources of <i>S. rolfsii</i> isolates and locations.....	37
2.	Pathogenicity of different <i>S. rolfsii</i> isolates on peanut (Giza 6) recorded 15 and 30 days after sowing.....	39
3.	Pathogenicity of different <i>S. rolfsii</i> isolates on sunflower plants (hybrid 109) recorded 15 and 30 days after sowing.....	41
4.	Effect of different natural media on mycelial growth (cm) (mg) after 5 days and sclerotial number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	44
5.	Effect of different synthetic media on mycelial growth (cm) (mg) after 5 days and sclerotial number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	49
6.	Effect of different temperature on mycelial growth (cm) (mg) after 5 days and sclerotial number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	54
7.	Effect of different carbon sources on mycelial growth (cm) (mg) after 5 days and sclerotia number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	58
8.	Effect of different nitrogen sources on mycelial growth (mg) (cm) after 5 days and sclerotia number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates	61
9.	Mycelial compatibility groups of 21 <i>S.rolfsii</i> isolates according to dendrogram.....	65
10.	Mycelial compatibility among different <i>S. rolfsii</i> isolates on PDA medium after 7 days.....	67
11.	Digitized patterens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 1.....	70
12.	Banding patterens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 1.....	70
13.	Digitized patterens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 2.....	73

III

14.	Banding pattenrens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 2.....	74
15.	Digitized pattenrens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 3.....	77
16.	Banding pattenrens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 3.....	77
17.	Digitized pattenrens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 4.....	80
18.	Banding pattenrens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 4.....	81
19.	Amounts of oxalic acid produced by 12 <i>S.rolfsii</i> isolates on PDB	82
20.	Effect of biocontrol agents on reduction of mycelial growth and sclerotial production of <i>S. rolfsii</i> isolates.....	84
21.	Effect of biocontrol agents and fungicides on disease incidence of peanut root rot caused by <i>S. rolfsii</i> isolate (P3).....	86

LIST OF FIGURES

No.		Page
1.	Symptoms caused by <i>S. rolfsii</i> pathogen on peanut (a) and sunflower (b) plants artificially inoculated 45 days after sowing. Note:(a) arrow show mycelium on crown area on peanut and(b) on sunflower.....	36
2.	Symptoms of peanut root rot caused by <i>S.rolfsii</i> (artificial inoculation) 45 days after sowing. Note: (a) arrow show mycelium on crown area, (b) mycelium and sclerotia initially were formed on crown area.....	40
3.	Symptoms of sunflower root rot artificial inoculation with <i>S.rolfsii</i> 45 days after sowing. Note: (a) white mycelium on crown area, (b) mycelium and sclerotia initially were formed on crown area.....	42
4.	Effect of different natural media on mycelial growth of <i>S. rolfsii</i> isolates...	45
5.	Effect of different natural media on sclerotial number of <i>S. rolfsii</i> isolates.	46
6.	Effect of different natural media on mycelium condition of <i>S. rolfsii</i> , (a) PDA, radial fluffy growth (b) Yeast ex., compact radial and (c) V8., poor and light growth lay to the base.....	47
7.	Effect of different synthetic media on mycelial growth of <i>S. rolfsii</i> isolates	50
8.	Effect of different synthetic media on sclerotial number of <i>S. rolfsii</i> isolates.....	51
9.	Effect of different synthetic media on mycelium condition of <i>S. rolfsii</i> , (a) Br, heavy, cotton and fluffy (b) Cz., radial light mycelium and (c) Brown's, poor light mycelia lay to the base.....	52
10.	Effect of different temperature degrees on mycelial growth of <i>S. rolfsii</i> isolates.....	55
11.	Effect of different temperature degrees on sclerotial number of <i>S. rolfsii</i> isolates.....	56
12.	Sclerotia production on PDA at different temperature, mycelial condition at 30°C show radial fluffy growth.....	57
13.	Effect of different carbon sources on the means (a) on mycelial growth and (b) sclerotial number of <i>S. rolfsii</i> isolates.....	59

14.	Effect of different nitrogen sources on the means (a) on mycelial growth and (b) sclerotial number of <i>S. rolfsii</i> isolates.....	62
15.	Pairings of three isolates of <i>S. rolfsii</i> from three different MCGs showing the development of A,B,and C incompatible reactions (clearing zones) in the region of mycelial contact. Photograph was taken 2 weeks after growth on potato dextrose agar. D. Pairing between isolates of <i>S.rolfsii</i> showing mycelial compatible. Note. A) arrow show the sclerotia on the line formation between incompatible isolates, B) barrage zone formation on the area between incompatible isolates, C)arrow show lyses on the area between incompatible isolates and D) show intermingled or produced a knitted ridge between mycelium in the zone of mycelial contact.....	64
16.	A and B) Anastomosis between two compatible isolates show H&A shape.C) Pairings of two isolates of <i>S. rolfsii</i> from different MCGs show the development of incompatible reactions (lysis between hyphae).....	65
17.	Dendrogram for protein profile of 21 isolates of <i>S. rolfsii</i> from different plants and locations.....	66
18.	RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer1	69
19.	Dendrogram divied from RAPD analysis of 12 isolates of <i>S. rolfsii</i> using primer 1.....	69
20.	RAPD profile analysis of 12 <i>S. rolfsii</i> isolates using primer 2	72
21.	Dendrogram divied from RAPD analysis of 12 isolates of <i>S. rolfsii</i> using primer 2.....	72
22.	RAPD profile analysis of 12 <i>S. rolfsii</i> isolates using primer 3	76
23.	Dendrogram divied from RAPD analysis of 12 isolates of <i>S. rolfsii</i> using primer 3.....	76
24.	RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 4	79
25.	Dendrogram divied from RAPD analysis of 12 isolates of <i>S. rolfsii</i> using primer 4.....	79
26.	Amounts of oxalic acid produced by 12 <i>S. rolfsii</i> isolates after 6 days	83
27.	Effect of different bioagents on reduction of mycelial growth of <i>S. rolfsii</i> isolaltes. A) <i>T.harzianum</i> B) <i>T. atroviride</i> C) <i>T. viride</i> and D) <i>B. subtilis</i> ...	85

LIST OF ABBREVIATIONS

BAM	Basel agar medium
Cz	Czpek's
MCG	Mycelial compatibility groups
mg	mycelial growth
PCR	Polymerase chain reaction
PDA	Potato dextrose agar
PDB	Potato dextrose broth
RAPD	Random Amplified Polymorphic DNA markers
Red	Reduction
Sn	Sclerotial number
BAM	Basel agar medium

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4.	Effect of different natural media on mycelial growth (cm) (mg) after 5 days and sclerotial number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	44
5.	Effect of different synthetic media on mycelial growth (cm) (mg) after 5 days and sclerotial number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	49
6.	Effect of different temperature on mycelial growth (cm) (mg) after 5 days and sclerotial number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	54
7.	Effect of different carbon sources on mycelial growth (cm) (mg) after 5 days and sclerotia number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates.....	58
8.	Effect of different nitrogen sources on mycelial growth (mg) (cm) after 5 days and sclerotia number (Sc. No./ plate) after two weeks incubation at 30°C of <i>S. rolfsii</i> isolates	61
9.	Mycelial compatibility groups of 21 <i>S.rolfsii</i> isolates according to dendrogram.....	65
10.	Mycelial compatibility among different <i>S. rolfsii</i> isolates on PDA medium after 7 days.....	67
11.	Digitized patterens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 1.....	70
12.	Banding patterens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 1.....	70
13.	Digitized patterens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 2.....	73

14.	Banding pattenrens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 2.....	74
15.	Digitized pattenrens and dendrogram derived from RAPD profile analysis of 12 isolates of <i>S. rolfsii</i> using primer 3.....	77
16.	Banding pattenrens MW of 12 isolates of <i>S. rolfsii</i> obtained from RAPD analysis using primer 3.....	77
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