

Dedication

To my mother

To the soul of my father

To my brothers and sisters

To my family

To my teachers

To my colleagues and friends

With love and respect.

Jabber

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All thanks are due to Almighty Allah ,who gave me health and strength, and helped me tremendously to present this work.

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List of Tables

Contents

Title	Page
الأية.....	Page
DEDICATION.....	I
ACKNOWLEDGEMENT.....	II
Lists.....	III
Contents.....	III - VI
list of tables.....	VII
List of Figures.....	VIII
List of plats.....	X
Abstract.....	IX
ملخص البحث.....	XI
CHAPTER ONE.....	1
1: INTRODCUTION.....	1-3
CHAPTER TWO.....	4
2: LITERATURE REVIEW.....	4
2.1.0. potato (<i>Solanum tuberosum l.</i>).....	4
2.1.1 Scientific classification.....	4-5
2.1.2 Economic importance of potato plant.....	6-7
2.2 Fusarium dry rot.....	7
2.2.1 Classification.....	8
2.2.2Host ranage and distribution.....	8
2.2.3 Phylogeny.....	8-9

2.2.4 Description.....	9-10
2.2.5 Casaul organism.....	10
2.2.6 Symptoms.....	10
2.2.7 Diseases cycle.....	11-13
2.2.8 Environment (ecology).....	15
2.2.9 Importance.....	13
2.3 Management.....	14
2.3.1 Culture practices.....	14
2.3.2 Soil solarization.....	14-15
2.3.3 Botanical control.....	15 - 16
2.3.5 Chemical control.....	16
CHAPTER THREE.....	17
MATERIALS AND METHODS.....	17
3.1 Collection of plant samples.....	17
3.2 Isolation of <i>Fusarium solani f.sp. eumartii</i> from plant material.....	17-18
3.2.2 Source of plant material.....	18
3.3.3 Preparation of crude aqueous extract of plant.....	18
3.3.4 Preparation of fungicide concentration.....	18
3.4 Text procedure.....	18 - 19
3.5 Experimental design.....	19
3.6 Statistical analyses.....	20
CHAPTER FOUR.....	21
Results.....	21

4.1- Isolation and Identification from the infected sample of Potato plant.....	21
4.1- Effect of fruits and root aqueous extracts of Garlic, Ginger and Fungicide Rivos top on the linear growth of <i>Fusarium solani invitro</i> ...	22
4.2 - Effect of aqueous extracts of Garlic, Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani invitro</i>	26
4.3 - Effect of leaves aqueous extracts of Garlic, Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani invitro</i>	29
4.4 Effect of aqueous extracts of Garlic, Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani invitro</i>	32
CHAPTER FIVE.....	38
Discussion.....	38 - 40
Conclusion.....	41
Recommendation.....	42
References.....	43 - 52
Appendix.....	53 - 54
Material and equipment.....	55

List of Tables

Title	Page
Table 1 Effect of aqueous extracts of Garlic ,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium Solani f. sp.eumartii</i>	24
Table 2 Effect of aqueous extracts of Garlic ,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium Solanif. sp. eumartii</i>	27
Table 3 Effect of aqueous extracts of Garlic ,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium Solanif. sp. eumartii</i>	30
Table 4 Effect of aqueous extracts of Garlic ,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium Solanif. sp. eumartii</i>	33

List of Charts

Title	Page
Figure 1 Fig.1.Effect of aqueous crude extracts of Garlic,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani f sp. Eumart Invitro</i>	25
Figure 2 Fig.1.Effect of aqueous crude extracts of Garlic,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani f sp. eumartii Invitro</i>	28
Figure 3 Fig.1.Effect of aqueous crude extracts of Garlic,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani f sp. eumartii invitro</i>	31
Figure 3 Fig.1.Effect of aqueous crude extracts of Garlic,Ginger and Fungicide Revus top on the linear growth of <i>Fusarium solani f sp. eumartii invitro</i>	34

List of Plates

Title	Page
Plate.(1):Disease cycle of <i>F.solanif.sp.eumartii</i>	12
Plate (2) A- Conidiophores B-Macroconidia C-Chlamydiospores D-Microconidia.....	21
Plate (3) Diseases caused by pathogenic <i>Fusarium</i> spp. on potato. A= Dry rot on potato by <i>F.oxysporum</i> , B = Dry rot on potato by <i>F.solani</i> species complex.....	22
Plate (6) <i>F.oxysporum</i> and <i>F.solani f.sp.eumartii</i>	32
Plate (7) Effect of aqueous extracts of Garlic fruit on the growth of <i>Fusarium solani f.sp.eumartii invitro</i>	35
Plate (8) Effect of aqueous extracts of Ginger root on the growth of <i>Fusarium solani f.sp.eumartii invitro</i>	36
Plate (9) Effect of aqueous extracts of Revus top R (56.2ai)EC on the growth of <i>Fusarium solani f.sp.eumartii invitro</i>	37

ABSTRACT

Potato is one of the most important crops and staple food of many cultures and civilizations past and present. Fusarium dry rot is one of the most important diseases of potato worldwide, affecting tubers in storage and seed pieces after planting causing losses up to 60%. Considering the irrational use of synthetic pesticides to control various pests and pathogenic microorganisms of crops plants and their adverse effects on environment, natural habitats through their residual toxicity, this study was conducted under laboratory conditions at Plant pathology Department, College of Agricultural Studies “Shambat”, Sudan University of Science and Technology, to investigate the bioactivity of aqueous extracts of Garlic fruits, Ginger roots and efficacy of Fungicide (Revus Top) against fungal growth of *Fusarium solani*, the causal agent of dry rot of potato . Three concentrations of aqueous extract of Garlic and Ginger, each of 25%, 50% and 100%, and fungicide at three concentrations, 25%, 50%, and 100% were used in addition to control. The assessment of their inhibitory effect against the fungus was recorded through the percentage of fungal growth inhibition. The results revealed that all concentrations of the aqueous extracts of Garlic and Ginger and Fungicide exhibited significantly high inhibitory effect ranging from 49.3% to 100% against the linear growth of test fungus compared to control. The highest concentration of Garlic extract (100%), Ginger (100%) and the Fungicide (100%), gave significantly higher inhibition zones percent (88.6%, 78.9% and 90.0%) respectively compared to the untreated control in day six after inoculation. Among the plant extracts tested that of Garlic at all concentration (25%, 50% and 100%) was generally the most effective in suppressing the fungus growth(44.4%, 74.4% and 91.0%) than its equivalent Ginger (44.5%, 70.0% and 85.6%) respectively. Moreover, concentration of each aqueous extract as well as that of fungicide reacted differently against test fungus. Generally, the results showed that the antifungal activity increasing with increase in extract concentration and time . Obviously, the test fungus differs in its response to the different concentrations but on the whole, growth inhibition increased with increased concentration. The current results were considered promising and encouraging to use bicarbonates salt for plant disease control.

ملخص البحث

يعتبر البطاطس احد اهم المحاصيل فى العالم كونه غذاء اساسى للعديد من الحضارات و الثقافات فى الماضى والحاضر. كما يعتبر مرض العفن الجاف الفيوزيريومى فى البطاطس من اهم امراض هذا المحصول فى العالم والذى يؤثر على درنات البطاطس و قطع البذور بعد الزراعة مسببا خسائر تصل الى ٦٠%. اخذين فى الاعتبار الإستعمال الغير مرشد للمبيدات المصنعة لمكافحة الافات والكائنات الدقيقة الممرضة للمحاصيل النباتية واثارها السالبة على البيئة والحياة الطبيعية عبر مخلفاتها السامة، اجريت هذه الدراسة تحت ظروف المختبر بقسم وقاية النبات بكلية الدراسات الزراعية،جامعه السودان للعلوم والتكنولوجيا (شمبات) لدراسة الفعالية الحيوية للمستخلص المائى لثمار نباتات الثوم ، جزور الزنجبيل وفعالية المبيد الفطرى رافيس توب على نمو الفطر المسبب لمرض العفن الجاف فى البطاطس. استخدمت ثلاثة تراكيز (25%,50%,100%) لكل من المستخلص المائى لثمار نباتات الثوم ، وجزور الزنجبيل و المبيد الفطرى رافيس توب كل اضافة الى الشاهد. تم تقييم الاثر التثبيطى لهذه التراكيز بتسجيل نسبة تثبيط نمو الفطر. اوضحت النتائج ان كل تراكيز المستخلص المائى للنباتات المختبرة و المبيد الفطرى قد اظهرت تاثير معنوى هام تراوح بين ٤٩.٣% و 100% ضد نمو الفطر المختبر مقارنة بالشاهد. كما ان التراكيز الاعلى (100%) لكل من المستخلصات المائية و المبيد الفطرى اعطت اعلى نسبة تثبيط (90.0% and 78.9%, 88.6%) مقارنة بالشاهد على التوالي فى اليوم السادس من بداية التجربة. اما فيما بين المستخلصات المائية المختبرة فان مستخلص الثوم عامة وفى كل التراكيز (٢٥%، ٥٠% و 100%) كان الاكثر فعالية فى تثبيط نمو الفطر (٤٤.٤%، ٦٤.٤% و 91.0%) من مثيله مستخلص الزنجبيل (٤٤.٥%، ٦٠.٠% و 85.6%) على التوالي. ايضاً فان تراكيز المستخلصات المائية للنباتات المختبرة و المبيد الفطرى قد تفاعلت كل على حده ضد الفطر المختبر. عموماً اظهرت النتائج ان الفعالية ضد الفطر تزداد بزيادة تركيز المستخلصات. من الواضح ايضا من النتائج ان الفطر المختبر متباين فى استجابته للتراكيز المختلفه. النتيجة الحالية تعتبر واعده و تشجع على إجراء تحاليل كيميائية لجزور نبات الجنجرو ثمرة الثوم باستعمال مستخلصات مختلفة لتحديد المادة الفعالة.