CRITERION 2 – TEACHING – LEARNING AND EVALUATION

AQAR-2021-2022

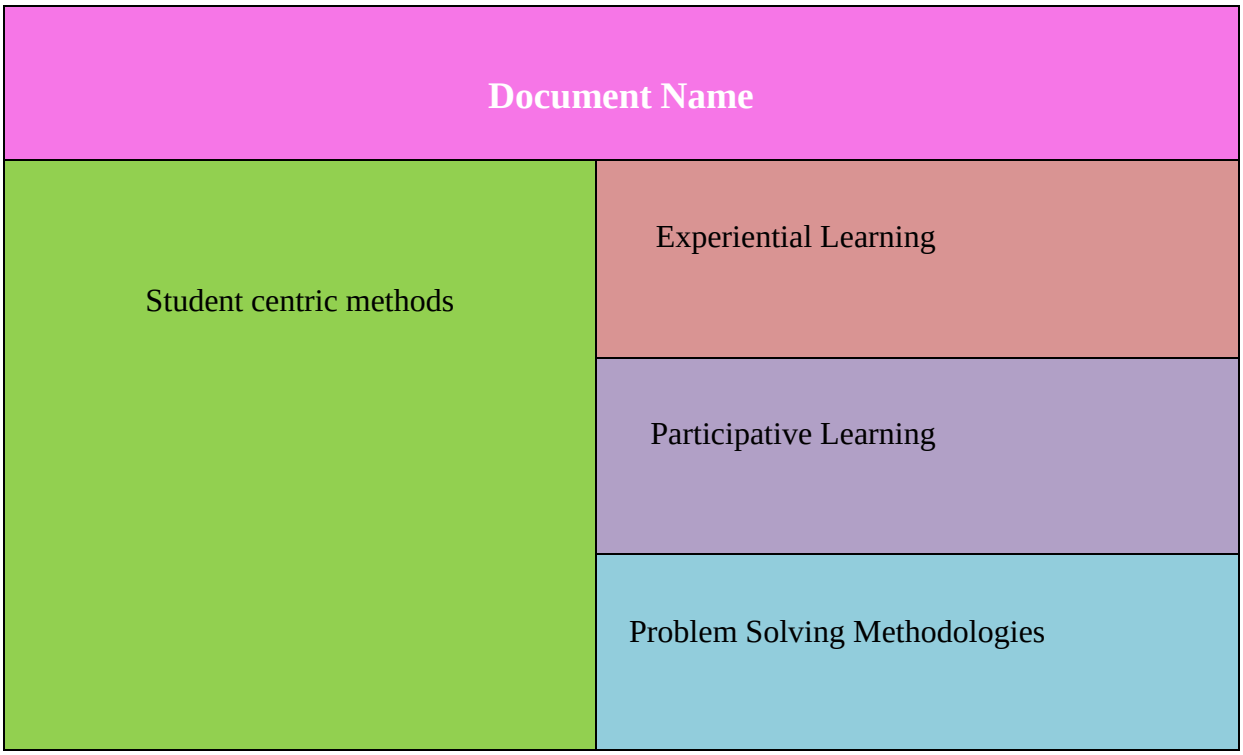
2.3 Teaching Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies

CRITERION 2 – TEACHING – LEARNING AND EVALUATION

2.3 Teaching Learning Process

2.3.1 Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning



SENGUNTHAR ARTS AND SCIENCE COLLEGE

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PG AND RESEARCH DEPARTMENT OF MICROBIOLOGY

PROJECT TITLE

CLASS-II M.Sc APPLIED MICROBIOLOGY ACADEMIC YEAR 2021-2022

S. No	Roll No	Name of the Student	Title of the Project
1	20M1101	S Naveenkumar	Invitro demonstration of bacterial effects of Zinger
2	20M1102	R Praveenkumar	Antibacterial activity of medicated soap from wound infection
3	20M1103	P Ragul	Invitro demonstration of bacterial effects of garllic
4	20M1104	P Tamilselvan	Bacterial contamination of poultry feeds molecular studies and antibacterial resistance profiles of isolates
5	20M1105	S Vignesh	Syntheisis of silver nanoparticles by chemical and biological methods for antibacterial activity
6	20M1106	B Dharani	Antimicrobial activity of different types of honey to isolate from diabetic wound
7	20M1107	R Gayathiri	Antimicrobial activity of trichoderma against the bacterial and fungal phytopathogens
8	20M1108	K S Hemalatha	Biocontrol of Aspergilluys sp (Afflotoxin) in groundnut using Trichoderma species
9	20M1109	A Mona	Antibacterial activity of Citrus Sinues peel on bacterial isolates from wound
10	20M1110	U Sivashankari	Production and partial purification of L Glutaminase enzyme from actinobacterial strains

"IN VITRO DEMONSTRATION OF BACTERIOCIDAL EFFECTS OF GINGER"

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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This is to certify that the dissertation entitled on **"In vitro Demonstration of Bacteriocidal Effects of Ginger"** done by **S.Naveen kumar (Reg.No: 20PAM1081)** during academic year 2021-2022 in partial fulfillment for **Master of Science in Applied Microbiology,** Sengunthar Arts and Science College, Tiruchengode under my supervision. This work has not previously formed on the basis for the award of any degree, diploma, associateship, fellowship or other similar title.

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ACKNOWLEDGMENT

It is with greatest pleasure, I look back to acknowledge several people who had been a source of inspiration, encouragement throughout my project work.

With great sense of truthfulness, I render my gratitude and sincere thanks to my guide and supervisor, **Mr. T.R.PRAKASHA, M.Sc., M.Phil.,** Assistant Professor, Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode for provided me an opportunity to do my M.Sc research and which has enriched me tremendously. He has taught me how to critically approach a difficult problem to seek a solution through perseverance and hard work.

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(S.NAVEEN KUMAR)

SUMMARY AND CONCLUSION

Ginger (Zingiber Officinal) has long been used as naturopathy due to their potential ntimicrobial against different microbial pathogens in many countries like Bangladesh ginger is ed in different boiled food preparations this study was conduced to determine the antimicrobial ivity of soybean oil extract of dried ginger powder using agar diffusion assay against 24 olates of food borne pathogens including Escherichia coli Pseudomonas aruginose aphylococcus aureus ,Vibrio cholera Klebsiella spp Salmonella spp.

The present study showed the potent antimicrobial activity of the ginger extract against e all tested bacterial pathogen soybean oil extract of ginger showed highest zone of inhibition ainst Staphylococcus aureus compared to the gram negative bacteria soybeanoil extract of ger at boiling temperature has potential antimicrobial activity and could be used in food peration to get the synergistic effect of soybean and ginger.

The result obtained in this showed an explanation for the relatively higher apeutic efficacy of plant materials both ginger have antibacterial activity ginger have activity both bacteria there are several advantages for the use of spices as dietary supplement or rnative medicine manifested by reduction the chance for developing antibiotic-resistance teria that resulted from the frequent use of antibiotic beside decreasing the cost of treatement d also minimize the development of adverse drug reaction it is recommended for further in the re studies that should focus more on other advantages of spices especially the clinical plication in order to obtain low cost treatment and also prevention of recurrent infection.

Ginger rhizome is a famous medicinal plant with multiple application in food dustries and traditional medicine numerous studies confirmed its traditional medicine merous studies antibacterial activity according to this mini-review many studies exhibited de spectrum antibacterial activity of ginger rhizome the extract of remarkable antibacterial ivity was the essential oils it was also observed that there are many conflicting reports about antibacterial effectiveness of ginger against bacteria from different resources or approach bining microbiology organic chemistry molecular physiology pharmaceutical and medical nces would have great potential to explore and isolate these bioactive agent which could be d alone or in combination with other agent as a natural antibacterial drug.

In conclusion the study showed different types of bacteria commonly found in stive tract such as was the most prevalent isolate followed by was the least encountered ate it also concluded that ginger extract possess medicinal properties antibacterial activity and ginger extract possess medicinal properties antibacterial activity and that the inhibition of

bacterial growth was dose dependent even though the study did not measure the dose dependent even though the study did not measure the dose depedent extract used ginger is considered to be a safe herbal medicine with only few and insignificant adverse or side effect.

The study indicates that the spices like ginger and turmeric have antimicrobial and antioxidant activity firthur research may be needed to understand the in depth mechanisms through which these effect are exerted and also study the biological effects of antioxidant-rich herbs and spices on oxidative stress related diseases ginger alliums are for the preparation of our daily effect and also such as ginger have antimicrobial and antioxidant activity studies are needed to study the biological effects of antioxidant herbs and spices on oxidative stress related diseases.

ANTIBACTERIAL ACTIVITY OF MEDICATED SOAPS FROM WOUND INFECTION

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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Submitted for the viva-voice examination held no 06.06.22

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2. 06/06/22

DECLARATION

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R. PRAVEEN KUMAR

ACKNOWLEDGMENT

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(R.PRAVEEN KUMAR)

SUMMARY AND CONCLUSION

In our study, was to check the antibacterial activity of medicated soap sample against the bacteria isolation from wound. This study evaluated the antibacterial activity of soap. The soap sample were tested for antibacterial activity against three bacterial which were isolated from wound samples. Antibacterial activity was determined as an equivalent of the inhibition zones diameter (millimeter) after incubation of culture at 37°C for 24 hours. The zones diameter ere shown in the no.5,6. All soap samples showed sensitive against bacteria. Clear zone of inhibition were present around the discs. The measured diameter of zone represent graphically.

The skin is an important organ of the body that several for protection against infections by germs and shields delicate underlying tissues against injury. The forms, composition and numbers of normal flora vary in various area of the body and sometimes factor such as physiological states and age affects their distribution. The result obtained from their study be minimized for non-medical reasons because, over-utilization may reduce the resident micro flora, which may grow opportunistically above the normal threshold level, creating several attendance skin and detrimental health effects.

"IN VITRO DEMONSTRATION OF BACTERIOCIDAL EFFECTS OF GARLIC"

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

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Submitted for the viva-voice examination held no 06-06-2022

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DECLARATION

I hereby declare that the dissertation entitled on **"In vitro demonstration of bacteriocidal effects of garlic"** submitted to Periyar University, salem, Tamilnadu, India. In partial fulfillment of **Master Of Science In Applied Microbiology,** is recorded of original work done by me under the guidance of **Dr. P.Venkatachalam, M.sc., M.phil., Ph.D** Assiatant professor, Head of the Department, **PG and Research Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode,** and it has not previously formed the basis for the award of degree, diploma, associateship, fellowship, or other similar title to any candidate of any university.

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ACKNOWLEDGMENT

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P. Raghul.

(P.RAGHUL)

SUMMARY AND CONCLUSION

Garlic and ginger extract produced bacteriostatic effect against *Escherichia coli* and *Listeria monocytogenes* invitro.Both the spices exhibited more inhibitory effect against Gram positive organisms as compared to Gram negative .Hence both the spices provide a potential for their use as natural preservatives in food This preliminary screening study suggested that garlic used in traditional medicine have potentials as antibacterial agent for a variety of Gram-positive as well as Gram-negative organisms further detailed studies are needed to evaluate the possibility of the use of garlic as an antibacterial agent alone or in combination with conventional antibacterial.

A recent increase in the popularity of alternative medicine and natural products has renewed interest in garlic and their derivatives as potential natural remedies.This review may be useful to increase our knowledge of garlic therapeutic effect and improve our future experimental and clinical research plans. Although it is shown that garlic may have a significant clinical potential either in their own right or as adjuvant therapy in different disorders ,however due to some issue such as methodological inadequacies ,small sample sizes lack of information regarding dose rationale ,variation between efficacy and effectiveness trials .the absence of a placebo comparator or lack of control group most standard experiments and researches are needed to confirm the beneficial effect of garlic in various diseases future trials on the effect of garlic should include information on the dosage of active ingredients of standardized garlic preparation for better of different forms of garlic extract on standard drug therapy especially when used as adjuvant therapy.

Although garlic is believed to be a safe substances long –term trials of reasonable duration would provide insights into the possible side-effect of different garlic extract The safety of garlic should be tested especially in pregnant or breastfeeding women as well as in young children Long –term and large trials are also needed to evaluate the differences in mortality morbidity of cancer and cardiovascular diseases after garlic therapy.

"BACTERIAL CONTAMINATION OF POULTRY FEEDS, MOLECULAR STUDIES AND ANTIBACTERIAL RESISTANCE PROFILES OF ISOLATES "

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

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Date: 06-06-2022

CERTIFICATE

This is to certify that the dissertation entitled on "BACTERIAL CONTAMINATION OF POULTRY FEEDS, MOLECULAR STUDIES AND ANTIBACTERIAL RESISTANCE PROFILES OF ISOLATES"done by V.P.Tamilselvan (Reg.No: 20PAM1084) during academic year 2021-2022 in partial fulfillment for Master of Science in Applied Microbiology, Sengunthar Arts and Science College, Tiruchengode under my supervision. This work has not previously formed on the basis for the award of any degree, diploma, associateship, fellowship or other similar title.

Head of the Department

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Examiners:

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DECLARATION

I hereby declare that the dissertation entitled on **"BACTERIAL CONTAMINATION OF POULTRY FEEDS, MOLECULAR STUDIES AND ANTIBACTERIAL RESISTANCE PROFILES OF ISOLATES"**submitted to Periyar University, salem, Tamilnadu, India. In partial fulfillment of **Master of Science In Applied Microbiology,** is recorded of original work done by me under the guidance of**Ms.T.Nivedharshini M.sc.,Mphil.,** Assiatant professor, Head of the Department, **PG and Research Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode,** and it has not previously formed the basis for the award of degree, diploma, associateship, fellowship, or other similar title to any candidate of any university.

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Signature of the candidate
VP. Tamil Selvan

ACKNOWLEDGMENT

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(V.P. TAMILSELVAN)

CONCLUSION

The poultry feeds analysed in this study contained high presence of bacteria. Specific pathogenic bacteria test revealed the presence of Escherichiacoli, Salmonella sp., Klebsiella sp., ., Staphylococcusaureus and Proteus sp. Most of the isolates were determined to be multidrug resistant to commonly dispensed antibiotics.The molecular studies showed a correlation of multidrug resistance to plasmid DNA presence in the majority of bacterial isolates. Poultry feed manufacturers should be encouraged to invest in sterilization of feed additives to curb contamination of the feed and also have food safety department to help monitor standards of production as well as train the personnel on good manufacturing practices and proper hygiene

SYNTHESIS OF SILVER NANOPARTICLES BY CHEMICAL AND BIOLOGICAL METHODS FOR ANTIBACTERIAL ACTIVITY

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

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Examiners:

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2. _____

DECLARATION

I hereby declare that the dissertation entitled on **"SYNTHESIS OF SILVER NANOPARTICLES BY CHEMICAL AND BIOLOGICAL METHODS FOR ANTIBACTERIAL ACTIVITY "** submitted to Periyar University, salem, Tamilnadu, India. In partial fulfillment of **Master of Science In Applied Microbiology,** is recorded of original work done by me under the guidance of **Dr. P.ASHOKKUMAR, M.Sc., Ph.D** Assiatant professor, **PG and Research Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode,** and it has not previously formed the basis for the award of degree, diploma, associateship, fellowship, or other similar title to any candidate of any university.

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Dr.P.ASHOKKUMAR

Signature of the candidate

S.VIGNESH

ACKNOWLEDGMENT

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S.Vignesh

(S.VIGNESH)

SUMMARY

Silver nanopraticles was synthesized by chemical and biological method.

Synthesized nanoparticles was characterized by UV-Vis spectrophotometer, X-ray diffraction analysis, FT-IR analysis and size of nanoparticles were analysised in scanning electron microscope.

Silver nanoparticles was screened for antibacterial activity *against Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa*, and *Bacillus subtilis.*

Biological synthesized nanoparticles showed maximum activity against *Escherichia coli* and *pseudomonas aeruginosa* and followed by *staphylococcus aureus* and *Bacillus subtilis*.

"ANTIBACTERIAL ACTIVITY OF HONEY ISOLATE FROM DIABETIC WOUND "

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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This is to certify that the dissertation entitled on **"ANTIBACTERIAL ACTIVITY OF HONEY ISOLATE FROM DIABETIC WOUND"** done by **B. DHARANI(Reg.No: 20PAM1086)** during academic year 2021-2022 in partial fulfillment for **Master of Science in Applied Microbiology,** Sengunthar Arts and Science College, Tiruchengode under my supervision. This work has not previously formed on the basis for the award of any degree, diploma, associateship, fellowship or other similar title.

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Dr.J.ASHOKKUMAR

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2. _____

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(B.DHARANI)

SUMMERY

The antibacterial action of honey in infected wounds does not depend wholly on its high osmolarity. We tested the sensitivity of 5[illegible] strains of coagulase- positive *Staphylococcus aureus*, isolated from infected wounds, to a pasture honey and a manuka honey. There was little variation between the isolates in their sensitivity to honey; minimum inhibitory concentration were all between 2 and 3%(v/v) for the manuka honey and between 3 and 4%for the pasture honey. Thus, these honeys would prevent growth of *S.aureus*if diluted by body fluids a further seven- fold to fourteen-fold beyond the point where their osmolarity ceased to be completely inhibitory. The antibacterial action of the pasture honey relied on release of hydrogen peroxide, which in vivo might be reduced by catalase activity in tissues or blood.

The action of manuka honey stems partly from a phytochemical component, so this type of honey might be more effective in vivo. Comparative clinical trials with standardized honeys are needed. The antibacterial activity of honey against infected wound mainly depends on the osmolarity of honey. The activity of honey against various microorganisms differs. Number of microorganisms isolated from wound was tested with honey (Nilgiris) using agar well diffusion method. Different concentratio (5%to 50%) of honey was tested against *Staphylococcus aureus, Pseudomonas aeruginosa* and *Escherichia coli.*

It was found that *Staphylococcus aureus* shows more sensitivity than *Pseudomonas aeruginosa* and *Escherichia coli* and the minimum inhibitory concentrations were found to be 25%, 35% and 40% respectively

ANTIMICROBIAL ACTIVITY OF *Trichoderma species* AGAINST THE BACTERIAL AND FUNGAL PHYTOPATHOGENS

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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Date: 06.06.2022

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This is to certify that the dissertation entitled on **"ANTIMICROBIAL ACTIVITY OF *TRICHODERMA SPECIES* AGAINST BACTERIAL AND FUNGAL PHYTOPATHOGENS"** done by **R.Gayathri (Reg.No: 20PAM1087)** during academic year 2021-2022 in partial fulfillment for **Master of Science in Applied Microbiology,** Sengunthar Arts and Science College, Tiruchengode under my supervision. This work has not previously formed on the basis for the award of any degree, diploma, associateship, fellowship or other similar title.

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Dr. P.VENKATACHALAM

Submitted for the viva-voice examination held no 06.06.2022

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Gayathri. R

(R. GAYATHRI)

SUMMARY

Trichoderma harzianum and *Trichoderma atroviride* were isolated from soil. Secondary metabolites extraction of *Trichoderma species* were extracted from the two species namely *T. harzianum* and *T. atroviride*. Metabolite was extracted by solvent extraction procedure using ethyl acetate and methanol as organic. The solvent is evaporated to yield the crude metabolite, and then the crude extract dissolved in dimethyl sulphoxide at 1 mg/ml of concentration and kept in 4°C.

Sporicidal activity of *Trichoderma* extract against the *A. alternate, Fusarium oxysporum, F. solani* and *Verticillium sp. Trichoderma atroviride* effectively control the phytopathogenic fungus spores.

Antibacterial effect of the *Trichoderma* extract showed the effective inhibition both gram positive and gram negative plant pathogenic bacteria such as *Erwina sp, Xanthomonas sp, Pseudomonas sp*, and *Corynebacterium sp.*

This results suggested that *Trichoderma* extract separated from the *T. harzianum* and *T. atroviride* are used as a biocontrol agent against fusarium rot, late blight of potato, anthrose of tomato, citrus canker and wet rot of potato.

BIOCONTROL OF *Aspergillus species* (AFLATOXIN) IN GROUNDNUT USING *Trichoderma species*

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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Date: 06.06.2022

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This is to certify that the dissertation entitled on **"Biocontrol of *Aspergillus species* (aflatoxin) in groundnut using *Trichoderman species*"** done by **K.S.HEMALATHA (Reg.No: 20PAM1088)** during academic year 2021-2022 in partial fulfillment for **Master of Science in Applied Microbiology,** Sengunthar Arts and Science College, Tiruchengode under my supervision. This work has not previously formed on the basis for the award of any degree, diploma, associateship, fellowship or other similar title.

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MS. T.NIVEDHARSHINI

Submitted for the viva-voice examination held no 06.06.2022

Examiners:

1. 6/6/22

2. 6/6/22

DECLARATION

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Counter Signed by Guide

MS. T. NIVEDHARSHINI

Signature of the student

K.S.HEMALATHA

ACKNOWLEDGMENT

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(K.S.HEMALATHA)

5. SUMMARY:

The bio-control Trichoderma strains may arrest fungal growth, reduce aflatoxin production or both. Metabolites of *Trichodermaa species* play a role in their mechanism of action, although with a diversity of modes. Some are inhibitory to A. flavus growth; others reduce the accumulation of aflatoxin, presumably via degradation. Thus, an effective biocontrol strategy may be based on the combined use of multiple isolates with different mechanisms of action.

The bio-control agent of *Trichoderna harzianum* was tested with infected plant pathogen. By 24hour , showing maximum compatibility of *Trichoderma harzianum* with A.*flavus* 12.3 mm and the least compactibility with A.*parsiticus* 10.6mm as compared with 12mm. By 120hour , showing maximum compatibility of *Trichoderma harzianum* with *A.flavus* 38.6 mm and the least compactibility with A.*parsiticus* 27.0mm as compared with 70mm.

By 24hour, showing maximum compatibility of *Trichoderma viride* with *A.parasiticus* 11.6 mm and the least compactibility with *A.flavus* 9.3mm as compared with 12mm. By 120hour , showing maximum compatibility of *Trichoderma viride* with *A.paraciticus* 50 mm and the least compactibility with *A.nigar* 27.0mm as compared with 70mm.

This study is to exploit the beneficial effect of biofungicidal activity from the mytoxin producing plant pathogen. The outcome of this study reveals that showing the compactability with both the strains of *Trichoderma* and hence could be deployed against infected plant pathogens.

ANTIBACTERIAL ACTIVITY OF *CITRUS SINENSIS* (ORANGE) PEEL ON BACTERIAL ISOLATES FROM WOUND

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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Date: 06-06-2022

CERTIFICATE

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(A.MANO)

Corynebacterium bovis and *Staphylococcus aureus* and reported similar experience as in the present research with regards to their minimum inhibitory concentrations.

The phytochemical screening of the orange peel revealed that it contains active compounds, such as alkaloids, terpenes, flavonoids, reducing sugar, saponins, tannins and glycocides. The presence of these components may be responsible for the antibacterial activity of the orange peel. For example, studies have shown that the saponins present in the orange peel is known to cause interference with the multiplication of DNA and glucogen present is hydrolysed to produce products such as phenol compounds and acids with antiseptic action. Semiz and Sen.(2007);.Kumar et al, (2011),Amandeep and Ahmed(2009) and Nwankwo et al, (2014) all have also reported similar results for the various activities of citrus fruits extracte. Thus the present work is in agreement with theirs.

SUMMARY AND CONCLUSION:

This present work has shown that extracts from citrus sinesis have activity against the clinical isolates from wounds in this experiments. The rate at which pathogenic bacteria are developing resistance to common conventional antibiotics is alarming therefore it is heart warming to note that, we could find succor in abundantly available local remedy like orange peels for the treatment of wounds. It is hoped that, therapeutics can be developed from orange peels to which these organisms are yet to develop resistance. Therefore, the orange peel extract that has an antimicrobial property against these organisms isolated from infected wounds may be harnessed as one of the highly needed drugs from wounds treatment in the developing world.

PHYTOCHEMICAL ANALYSIS

DETERMINATION OF REDUCING SUGARS AND SUCROSE CONTENTS

Titration value – 1.1

DETERMINATION OF FRUCTOSE

CONTENT: STANDARD CURVE

TABLE- 7

CONCENTRATION	STANDARD	ORANGE PEEL	PROCESSED ORANGE PEEL
0.2	0.04	0.10	0.06
0.4	0.07	0.25	0.10
0.6	0.11	0.32	0.13
0.8	0.13	0.36	0.19
1.0	0.17	0.42	0.22

"PRODUCTION AND PARTIAL PURIFICATION OF L-GLUTAMINASE ENZYME FROM ACTINIBACTERIAL STRAINS "

A dissertation submitted to the Periyar University in partial fulfillment of the requirement for the award of the degree of

MASTER OF SCIENCE IN MICROBIOLOGY

Submitted by

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SENGUNTHAR ARTS AND SCIENCE COLLEGE

(Affiliated to Periyar University and Approved by AICTE, New Delhi)

TIRUCHENGODE – 637 205
TAMILNADU, INDIA

2021-2022

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Date: 06.06.22

CERTIFICATE

This is to certify that the dissertation entitled on **"PRODUCTION AND PARTIAL PURIFICATION OF L-GLUTAMINASE ENZYME FROM ACTINOBACTERIAL STRAINS"** done by **U. SHIVASANKARI (Reg.No: 20PAM1090)** during academic year 2021-2022 in partial fulfillment for **Master of Science in Applied Microbiology,** Sengunthar Arts and Science College, Tiruchengode under my supervision. This work has not previously formed on the basis for the award of any degree, diploma, associateship, fellowship or other similar title.

Head of the Department

Dr. P. VENKATACHALAM

Guide

Dr. ASHOK KUMAR

Submitted for the viva-voice examination held no 06.06.2022

Examiners:

1.

2.

DECLARATION

I hereby declare that the dissertation entitled on **"PRODUCTION AND PARTIAL PURIFICATION OF L-GLUTAMINASE ENZYME FROM ACTINOBACTERIAL STRAINS"** submitted to Periyar University, salem, Tamilnadu, India. In partial fulfillment of **Master of Science In Applied Microbiology,** is recorded of original work done by me under the guidance of **Dr.P.ASHOK KUMAR, M.Sc., Ph.D** Assiatant professor, Head of the Department, **PG and Research Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode,** and it has not previously formed the basis for the award of degree, diploma, associateship, fellowship, or other similar title to any candidate of any university.

Counter Signed By Guide

Dr.P.ASHOK KUMAR

Signature of the candidate

U. SHIVASANKARI

ACKNOWLEDGMENT

It is with greatest pleasure, I look back to acknowledge several people who had been a source of inspiration, encouragement throughout my project work.

With great sense of truthfulness, I render my gratitude and sincere thanks to my guide and supervisor, **Dr. P.ASHOK KUMAR, M.Sc., Ph.D.,** Assistant Professor, Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode for provided me an opportunity to do my M.Sc research and which has enriched me tremendously. He has taught me how to critically approach a difficult problem to seek a solution through perseverance and hard work.

I am deeply grateful to our Excellency our College, correspondent **Prof. A. Baladhandapani, M.A., M.Phil.,**

Dr. S. Ravikumar,M.Sc., M.Phil., Ph.D., Principle Sengunthar Arts and Science College, Tiruchengode, for the encouragement during the entire course of study for providing me an opportunity to undertake this study.

I express my deep sense thanks to **Dr.P.Venkatachalam, M.Sc., M.Phil., Ph.D.,** Assistant Professor and Head, Department of Microbiology, Sengunthar Arts and Science College, Tiruchengode for providing all the facilities for the successful completion of this project work

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I express my lovely thanks to my **classmates, friends** and **my beloved parents** for their support, valuable suggestion and timely help during the course of period for the successful completion of my dissertation work. I express my heartfelt thanks to my **colleagues, friends** for their incessant help throughout the project work.

I will be failing in my duty if I do not express my deepest gratitude to those microbes, who sacrificed their life during my experiment.

Last but not least, I am very grateful to all patients without whom this study would not have been completed.

Little achievements often require long, tortuous effort and bitter experiences including some sacrifices. And this is only possible when the almighty GOD keeps his handful of blessings on the head of anybody. I would like to submit everything beneath the feet of GOD.

(U.SHIVSANKARI)

SUMMARY AND CONCLUSION

The present study is attempted for screening the ability of various enzyme producing actinobacteria, L-glutaminase production, optimization and partial purification of Lglutaminase enzyme.

- Morphologically different ten actinibactrial strains were screened for 4 enzymes (amylase, protease, L-asparagines and L-glutaminase).
- A potential strain SM4 was identified and carried out the enzyme L-glutaminase production by flask fermentation method. The quantity of enzyme was assayed by spectrophotometric method.
- The enzyme were further partially purified by ammonium sulphate precipitation, dialysis and it possessed 114.1 IU/ml.
- The protein content was estimated at 108 ug/ml and the molecular weight of the protein was determined as 50 k Da.
- The antioxidant activity of the L-glutaminase was compared with that of the standard, ascorbic acid. Antioxidant activity of the L-glutaminase was lower than that of the ascorbic acid in the DPPH free radical scavenging assay.
- Antimicrobial activity of the L-glutaminase was performed by using the well diffusion method. L-glutaminase enzyme showed best activity against the bacterial pathogens (S. aureus (19mm), B. subtilis (20mm), K. pneumoniae (22mm), E. coli (18mm).
- Based on the molecular studies, the potential strain was identified as Streptomyces sp. strain SM4

The present study concluded that actinobacterium Streptomyces sp (SM4) will be best source for large scale production of L-glutaminase enzyme and it showed good antioxidant

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Primarily we wish to express our deep profound feelings and greetings to our institution, SENGUNTHAR ARTS AND SCIENCE COLLEGE. We wish to and express our sincere gratitude to our Thiru **P.Jegadeesan,** Secretary Correspondent for provided opportunity and necessary facilities in carrying out this project.

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