



Udayana University

NDSU NORTH DAKOTA
STATE UNIVERSITY

ABSTRACT BOOK

The International
Conference on Biosciences 2016

**“Advancing Biodiversity
for Sustainable Food Security”**

July 26 - 27, 2016

3rd Floor Postgraduate Building, Udayana University,
Jl. PB Sudirman, Denpasar-Bali, Indonesia

held by
Faculty of Mathematics and Natural Sciences,
Postgraduate Study Program of Biology,
and School of Biology, Udayana University, Bali

in collaboration with
North Dakota State University, USA

HEALTH AND MICROBIOLOGY		
1	Antibacterial Activity Against <i>Staphylococcus aureus</i> From Methanol Extract of Mangosteen Rind (<i>Garcinia mangostana</i> L.) Ketut Widyani Astuti and Ni Putu Ayu Dewi Wijayanti	33
2	Antagonistic Activity of <i>Salacca zalacca</i> Peel Against <i>Staphylococcus aureus</i> ATCC 25923 and Methicillin-Resistance <i>Staphylococcus aureus</i> ATCC 33591 Putu Agastya Satryana, Gek Marlathasia Aswania, and Ni Nengah Dwi Fatmawati	33
3	The Potential of Honeycomb From Wild Bee Mochammad Junus	34
4	Characterization of Lactic Acid Bacteria Isolated from Kimchi with Aview for Development of Probiotic Potential Agestiawan I.G.A.M. , Ramona Y., and Swastini D.A.	34
5	Mechanisms of Antibiotic filtrate <i>Streptomyces thermocarboxydus</i> against <i>Fusarium oxysporum</i> F020 Ultrastucture through Scanning Electron Microscope and Transmission Electron Microscope Retno Kawuri	35
6	Detection of Antibacterial Compound of <i>Piper betle</i> L. Purified Extract Againts <i>Propionibacterium acnes</i> by Bioautography Ni Luh Putu Vidya Paramita, Ni Wayan Budiningrum, Anak Agung Gede Rai Yadnya Putra, Putu Sanna Yustiantara, and I Made Agus Gelgel Wirasuta	36
7	Identification of Antagonists Isolated from Rhizosphere Zone of Watermelon Farm at West Sanur Village Bali to Fight <i>Fusarium oxysporum</i> infection A.A. Ngurah Nara-Kusuma, Yan Ramona, and Meitini Wahyuni Proborini	36
8	Role of Native Mycorrhizae Gigaspora, Acaulospora and <i>Glomus</i> sp. on the Growth of Cashew Nut (<i>Anacardium occidentale</i> L.) Seedlings Meitini Wahyuni Proborini	37
9	Seafood Culinary Safety: A Preliminary Study in Badung, Bali Luh Putu T. Darmayanti, N.L. Ari Yusasrini, and IDG. Mayun Permana	38
10	Microbial Contamination in Traditional Food Processing Pedetan Ni Made Ayu Suardani Singapurwa, A.A. Made Semariyani, and Putu Candra	38
11	Analysis of Total Microbial Fresh Vegetables in Styrofoam Box With Ice Cooling Technique During Storage Ida Ayu Rina Pratiwi Pudja and Pande Ketut Diah Kencana	39
12	Bioactivity of Antibacterial Compounds Isolated from Endophytic Actinomycetes <i>Neesia altissima</i> Bl. Rina Hidayati Pratiwi, Wibowo Mangunwardoyo, and Rosa Dewi Pratiwi	39
13	Copper Hair Level on Children with HIV/AIDS Niruri R, Wati K.D.K, Oktavianti K.A.D, and Cahyani M.R	40

DETECTION OF ANTIBACTERIAL COMPOUND OF *Piper betle* L. PURIFIED EXTRACT AGAINST *Propionibacterium acnes* BY BIOAUTOGRAPHY

Ni Luh Putu Vidya Paramita*, Ni Wayan Budiningrum, Anak Agung Gede Rai
Yadnya Putra, Putu Sanna Yustiantara, and I Made Agus Gelgel Wirasuta
Department of Pharmacy, Faculty of Mathematic & Science, University of Udayana
*Email: putu.vidya.paramita@gmail.com

ABSTRACT

Propionibacterium acnes are one of bacterial in skin surface which triggering an inflammation in acne. Purified extract of *Piper betle* Leaf has been reported for antibacterial activity against *Propionibacterium acnes* (Widyaningtyas, 2014). The aim of this study was to detection of antibacterial compound of *P. betle* L.purified extract against *P. acnes* by bioautography method. Detection of antibacterial compound was evaluated using TLC contact-bioautography. The inhibition zones were observed on the agar surface in the places where the spots of antimicrobials are stuck in the agar. Screening phytochemical of the inhibition zone was observed using reagents phytochemical such as ammonia (flavonoid), FeCl₃ (phenol), folin-ciocalteau (phenol), Liebermann burchard (triterpenoid and steroid), annisaldehyde-H₂SO₄ (terpenoid). Antibacterial compound which inhibit the growth of *P. acnes* was showed in Hrf 37 on agar surface. Phenol or derivates phenol in *Piper betle* were responsible for the antibacterial activity of *P. betle* against *P. acnes*. The flavonoid compound in Purified extract of *P. betle* are not active to inhibit the growth of *P. acnes*. Phenol or derivates phenol in *P. betle* is known like eugenol, hydroxychavicol, and chavibetol. Investigation of active compound using GC-MS are needed. Although purified extract of *P. betle* consist the highest amount of flavonoid, but the antibacterial compound for inhibition the *P. acnes* colonies were phenol or derivates phenol.

Keywords: *Piper betle*, Phenol, Derivates phenol, Contact-Bioautography, TLC

IDENTIFICATION OF ANTAGONISTS ISOLATED FROM RHIZOSPHERE ZONE OF WATERMELON FARM AT WEST SANUR VILLAGE BALI TO FIGHT *Fusarium oxysporum* INFECTION

A.A. Ngurah Nara Kusuma¹, Yan Ramona^{1,2*}, and Meitini Wahyuni Proborini¹

¹Postgraduate Study Program of Biology, Udayana University

²Integrated Lab. for Biosciences and Biotechnology, Udayana University

*Email: yan_ramona@yahoo.com or yan_ramona@unud.ac.ic

ABSTRACT

Fusarium oxysporum is a fungal pathogen that causes severe diseases in many horticultural crops, including water melon. In Sanur area where water melon has been cultivated for years, this fungal pathogen has cause significant loss among farmers. Until recently, farmers rely on the use of chemical based fungicides to cope with this fungal infection. To reduce negative side effects of these pesticides, the use of fungal antagonists has recently attracted significant attention. Therefore, our research was aimed to isolate and identify microbes antagonistic against *F. oxysporum*(the causative agent of vascular wilt in watermelon plants). The antagonists were isolated from soil samples collected from

watermelon farm located at west Sanur village, South Denpasar, Bali. Isolation and identification of the antagonists were conducted by applying spread plate and observation of morphological characteristics (for fungal antagonist) of biochemical reactions (for bacterial antagonists) methods, respectively. Two fungal species (*Trichoderma harzianum* and *Trichoderma viride*) and two bacterial species (*Pseudomonas* sp. and *Bacillus* sp.) antagonistic against *Fusarium oxysporum* and having potential to be developed as biocontrol agents, were successfully isolated in this project.

Keywords: watermelon, *Trichoderma harzianum*, *Trichoderma viride*, *Pseudomonas* sp., *Bacillus* sp., Bali.

ROLE OF NATIVE MYCORRHIZAE *Gigaspora*, *Acaulospora* AND *Glomus* sp. ON THE GROWTH OF CASHEW NUT (*Anacardium occidentale* L.) SEEDLINGS

Meitini Wahyuni Proborini

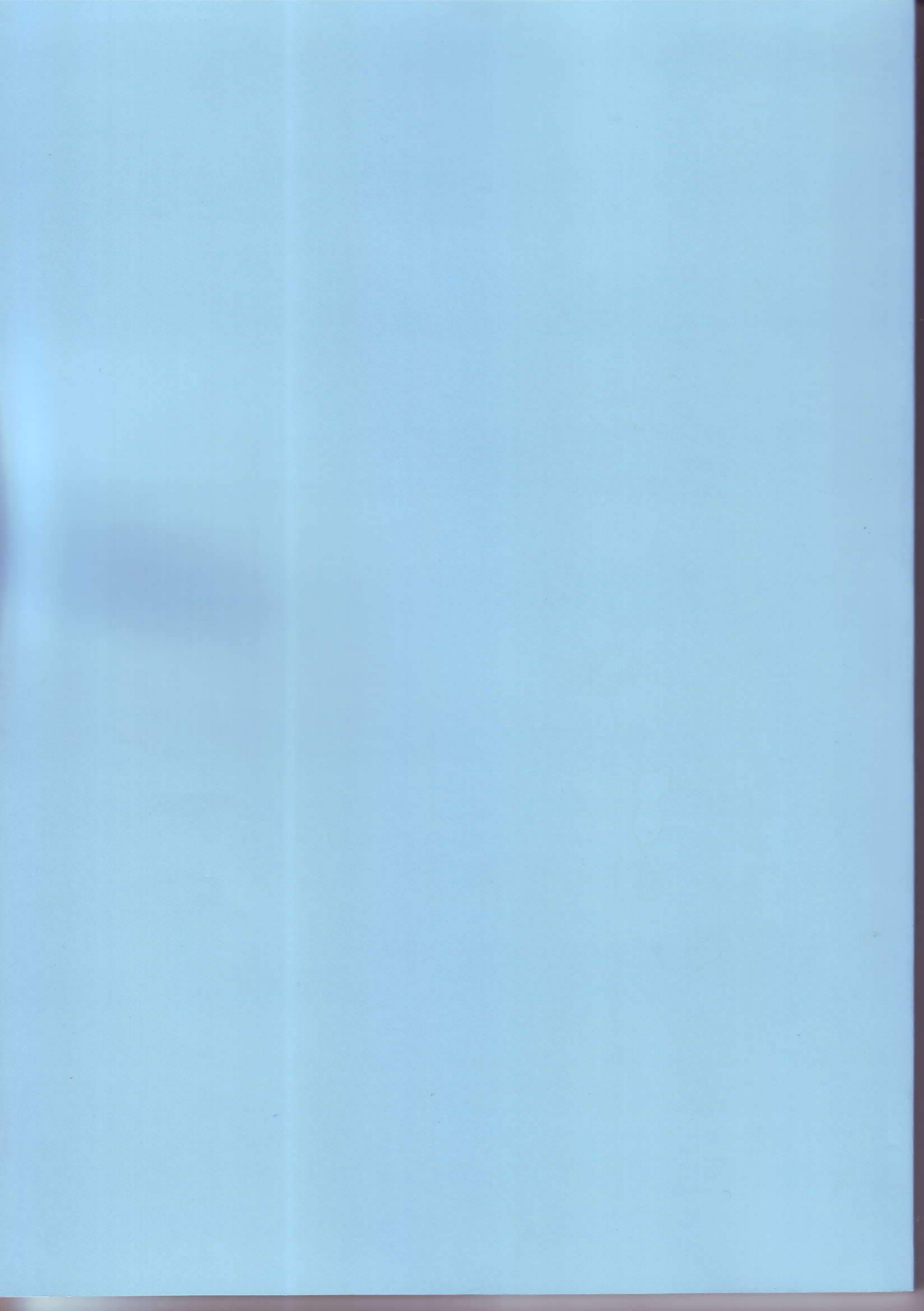
Biology Departement. Basic Science Faculty, University of Udayana

Email: pmeitini@unud.ac.id

ABSTRACT

Endomycorrhiza can strategically be applied as an effort to overcome the problem of agriculture at arid region such as at north-east and north-west of Bali. Many plant studies at marginal area reported the significant role of endomycorrhiza on boosting the growth rate, productivity and resistance to plant diseases nevertheless, it less concern on applied of Endomycorrhiza in Bali. Therefore it is strategic to conduct a reserach for Indigenous Bali endomycorrhiza development. The aim of this study was to formulate combining number of *Glomus*, *Gigaspora* and *Acaulospora* spores (0, 45, 60,75 and 90) for cashew nut nursery (*Anacardium occidentale*) with three replication. The experiment was conducted at *green house* of Biology Department Basic Science Faculty Udayana University. The results showed that there was positive result on the growth response of *A. occidentale* seedling (leaves number and plant height) by 75 number of spores. Therefore there was no significant effect on the response of *A. occidentale* seedling by 90 number of mycorrhizal spores. This finding indicate that the optimum number of spore was 75 spores take a positive role on the growth of cashew nut seedlings.

Keywords: *endomycorrhiza*, *spores*, *indigenous Bali*, *cashew seedlings*





Udayana University

CERTIFICATE OF PARTICIPATION

This is to certify that

Drs. Yan Ramona, M.App.Sc., Ph.D.

has participated as

Presenter

in The International Conference on Biosciences 2016
“**Advancing Biodiversity for Sustainable Food Security**”

July 26 - 27, 2016
Bali, Indonesia

held by

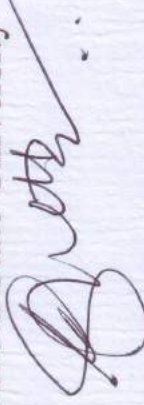
Faculty of Mathematics and Natural Sciences Udayana University, Bali
Postgraduate Study Program of Biology Udayana University, Bali
North Dakota State University, USA

Faculty of Mathematics and Natural Sciences
Udayana University
Dean,



Drs. Ida Bagus Made Suaskara, M.Si.

Assoc. Vice President for Int'l
Partnership and Collaboration,
North Dakota State University



Prof. Kalidas Shetty

Chairman of the Committee



Drs. Yan Ramona, M. App. Sc., Ph.D.

IDENTIFICATION OF ANTAGONISTS ISOLATED FROM
RHIZOSPHERE ZONE OF WATERMELON FARM AT
WEST SANUR VILLAGE BALI WITH A PROSPECTIVE
TO FIGHT *Fusarium oxysporum* INFECTION

By:

A.A. N. Nara Kusuma, Yan Ramona, Meitini W. Proborini

Postgraduate Study Program of Biology
Udayana University

Background

- Fusarium infection in water melon farm in Bali has been so massive
- Claim as the main cause of loss in farming practices (water melon)
- According to the report of the Indonesian Statistical Agency:
 - water melon production in Indonesia reached 474,327 tons in 2009
 - decreased sharply in 2010 where it only reached 348,631 tons
 - Mainly due to *Fusarium oxysporum* infection



Until recently, water melon farmers rely on the use of chemical-based fungicides to cope with this infection

- Long run application can cause many bad side effects
- Therefore: there is a need to find more environmentally friendly methods
- Biocontrol method appeared to be the best
- Research Objective:
To obtain potential antagonist isolates to be used to fight *F. oxysporum* infection in water melon plant.

Materials and Methods

- **Isolation of antagonists**
 - Using dilution and spread plate method on PDA or NA
 - Dual culture assay against *F. oxysporum*
- **Identification of bacterial and fungal antagonists**
- Based on morphological and physiological characteristics
- Compared with that specified in book references:
 - *Fungi and Food Spoilage*
 - *Bergey's Manual of Determinative Bacteriology*

Results

- Two potential fungal and two bacterial antagonists were successfully isolated in this project. The two potential fungal antagonists were identified as *Trichoderma harzianum* and *Trichoderma viride*

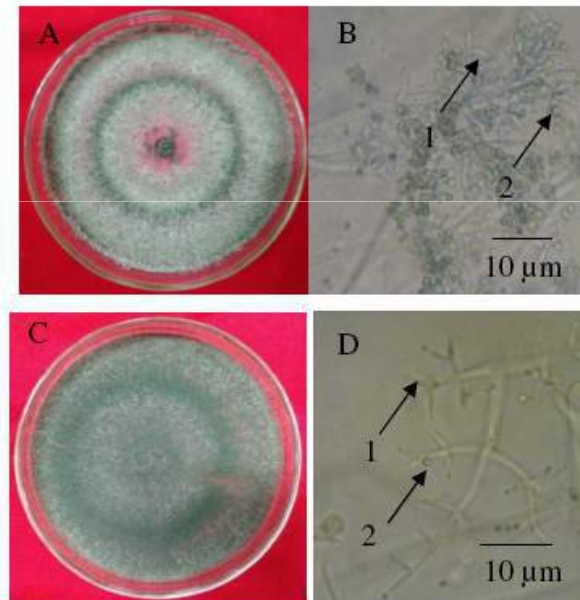


Figure 1: Macroscopic and microscopic characteristics of *T. harzianum* (A and B) and *T. viride* (C and D). Their Fialid and Konidia are shown by numbers 1 and 2, respectively

Two bacterial antagonists were successfully isolated in this research and they were identified as *Pseudomonas* sp. and *Bacillus* sp.

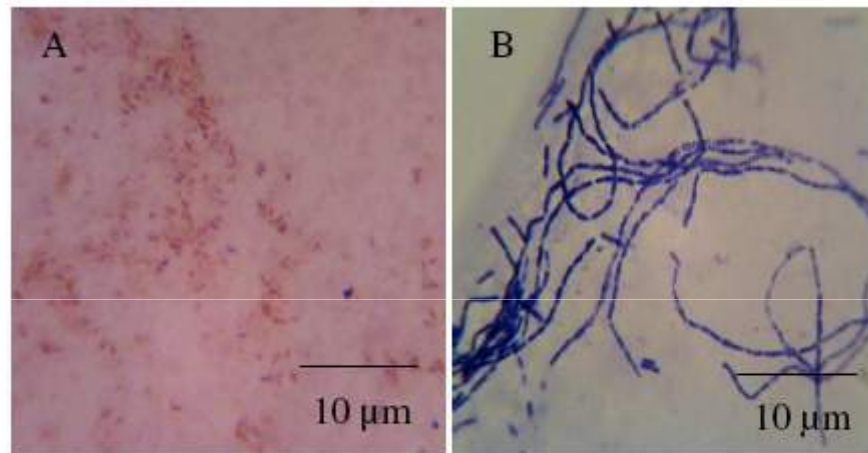


Figure 2: Microscopic characteristic of *Pseudomonas* sp. (A) and *Bacillus* sp. (B) observed under a light microscope (Yazumi) with magnification of 1000x

Conclusion

- Base on the morphological and physiological characteristics of the isolates, the two fungal and bacterial isolates were identified as *T. harzianum*, *T. viride*, *Pseudomonas* sp. and *Bacillus* sp.