Assesment of Pathogenic Potential of Promising Antianthrachnose Rhizobacteria

JAMSARI

Faculty of Agriculture-Andalas University
Campus Limau Manis-25136-Padang, West Sumatera-Indonesia

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BACKGROUND


Laboratorium Bioteknologi
Faperta-Unand
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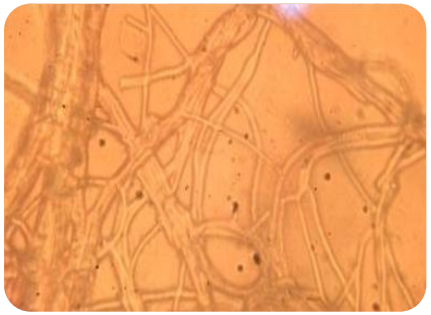
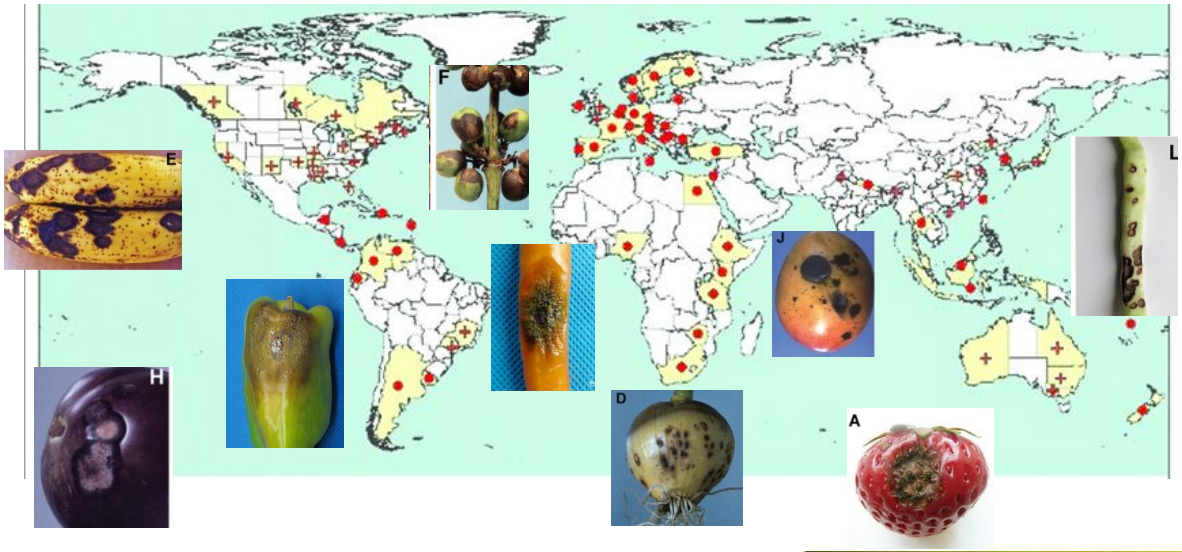
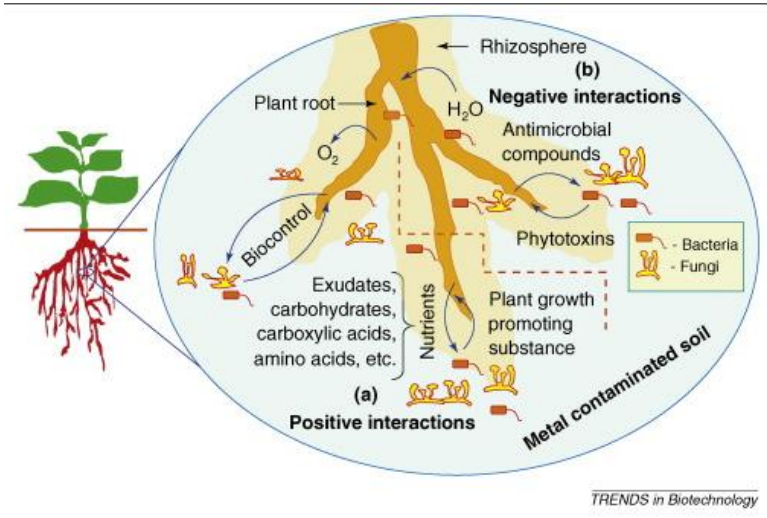
Anthrachnose: Worldwide Infection to Many Crops

C. gloeosporioides





Could reduce productivity up to 89%

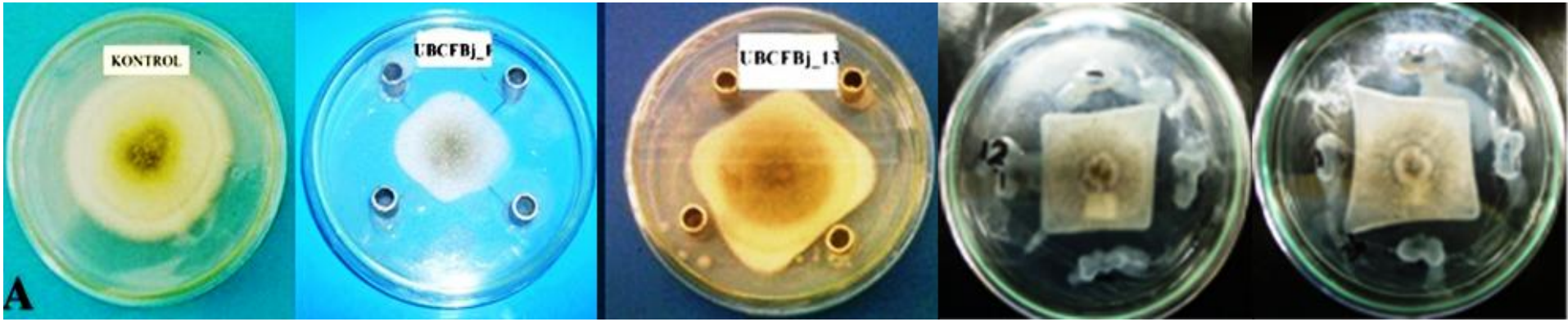


Rhizobacteria as Biological Control Agents

APPROACH:

SELECTION AND CHARACTERIZATION

Selection of Promising Isolates

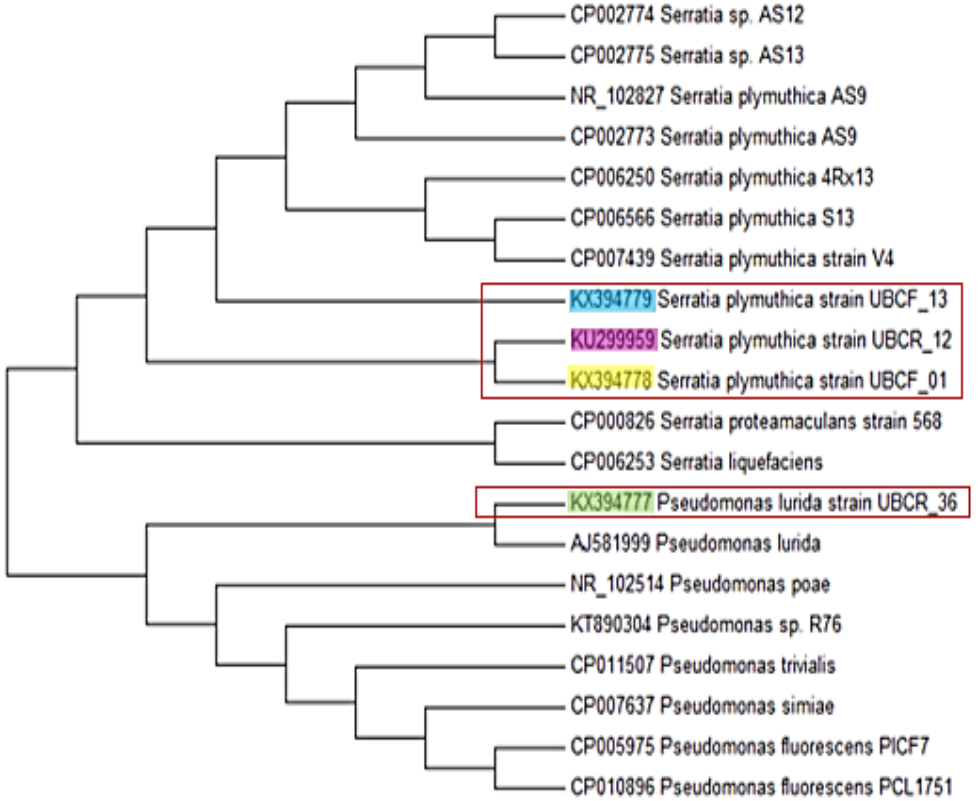


Control UBCF-01 UBCF-13 UBCR-12 UBCR-36

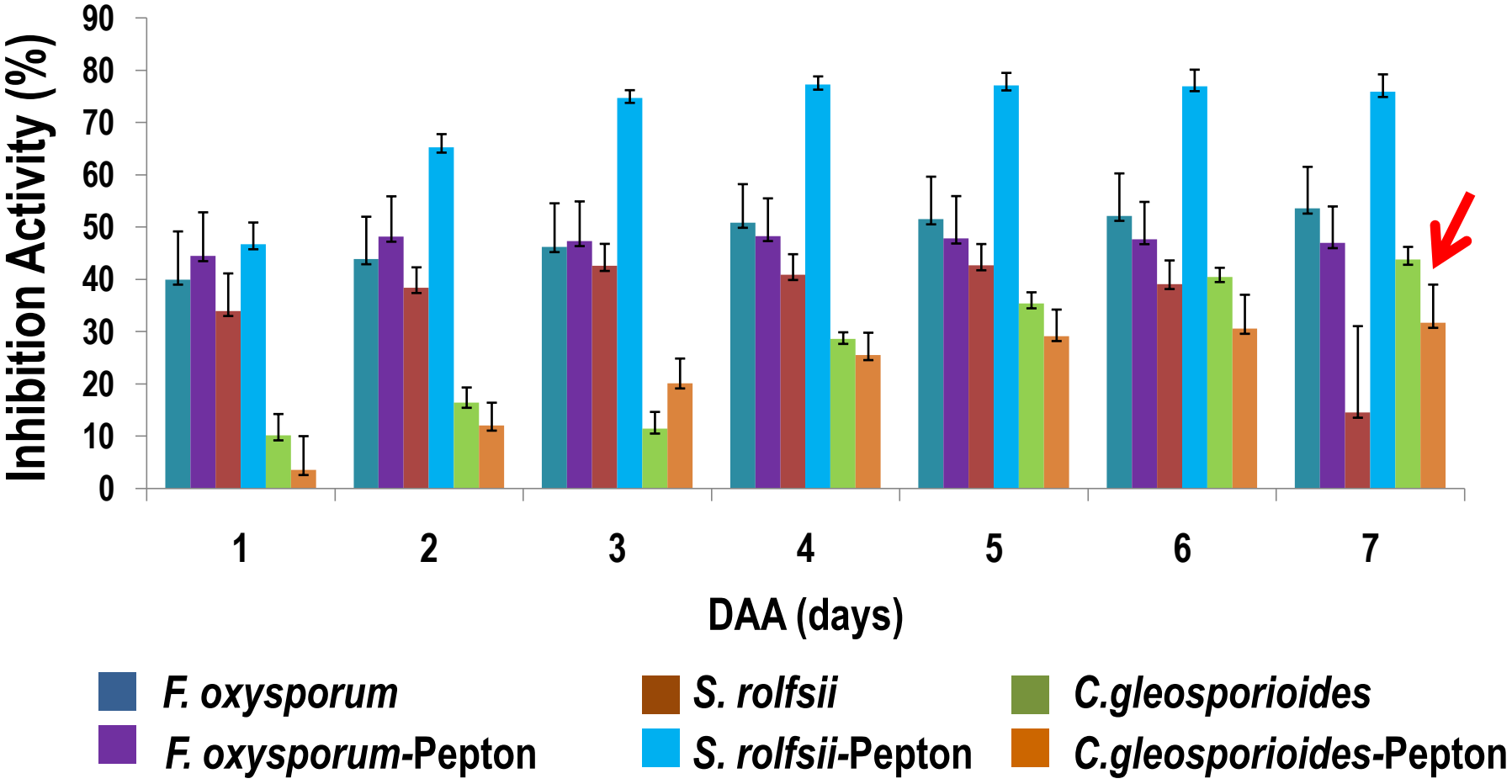
> 200 isolates were screened for antifungicidal activity

GenBank Accession Number

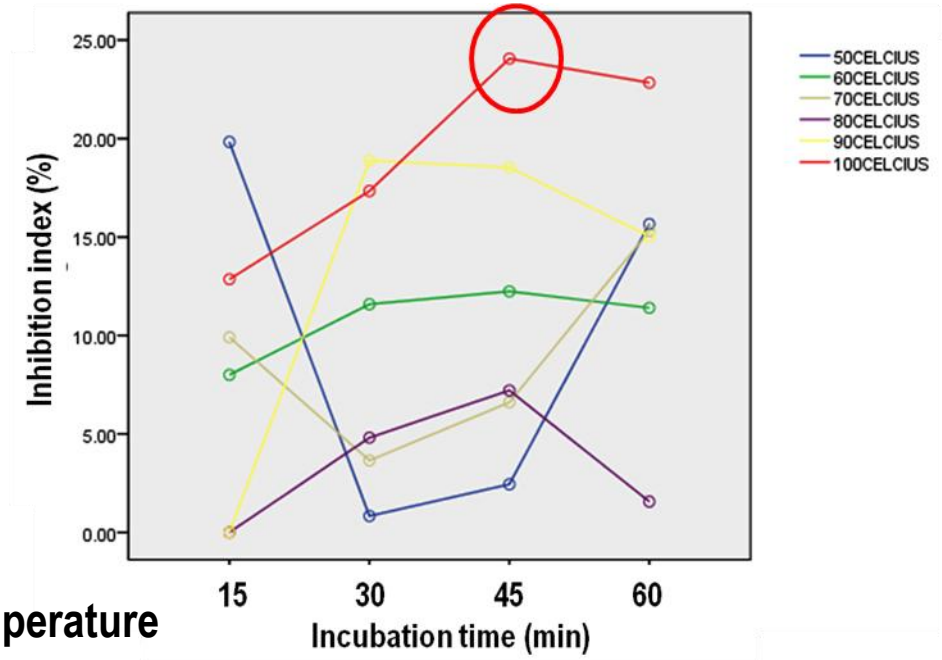
1. UBCR_12: KU299959
2. UBCR_36: KX394777
3. UBCF_01: KX394778
4. UBCF_13: KX394779



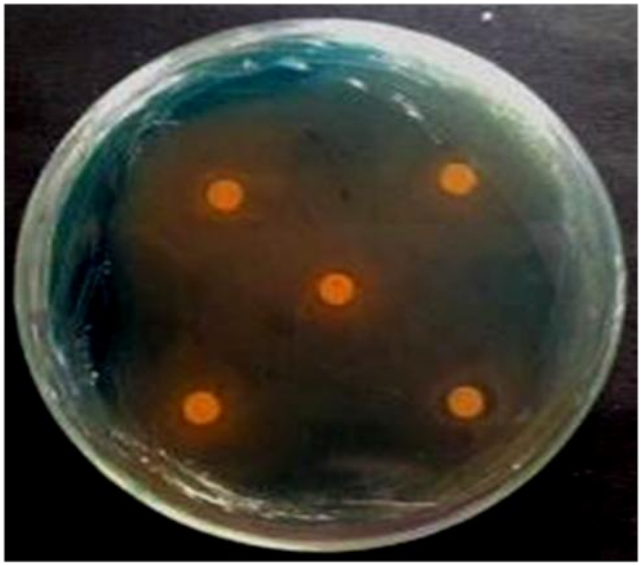
Antifungal Spectrum of Promising Isolates UBCR_12



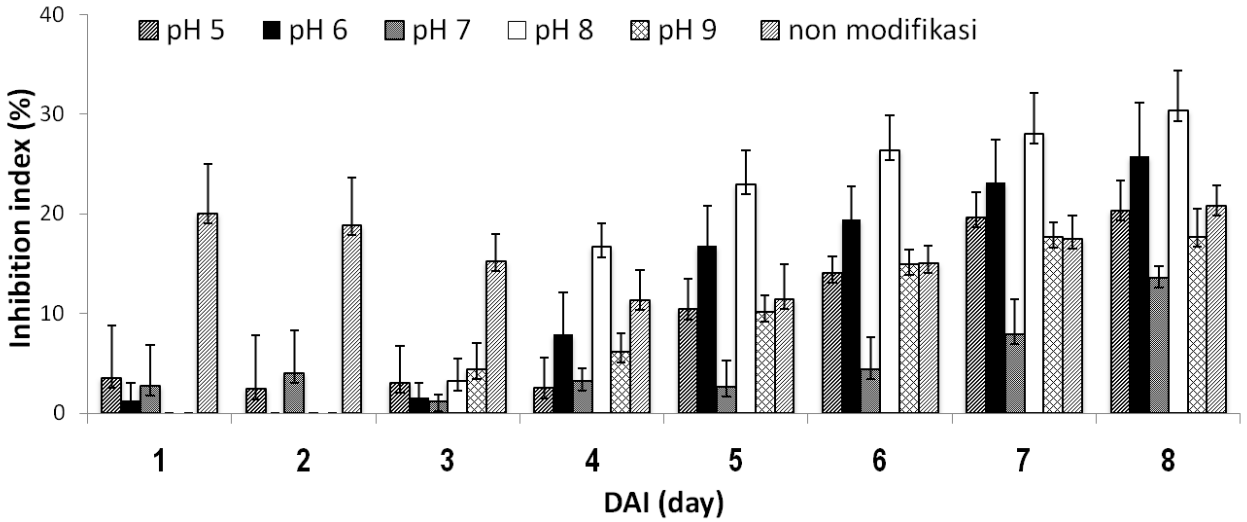
Biochemical Characterization of UBCR_12



Temperature

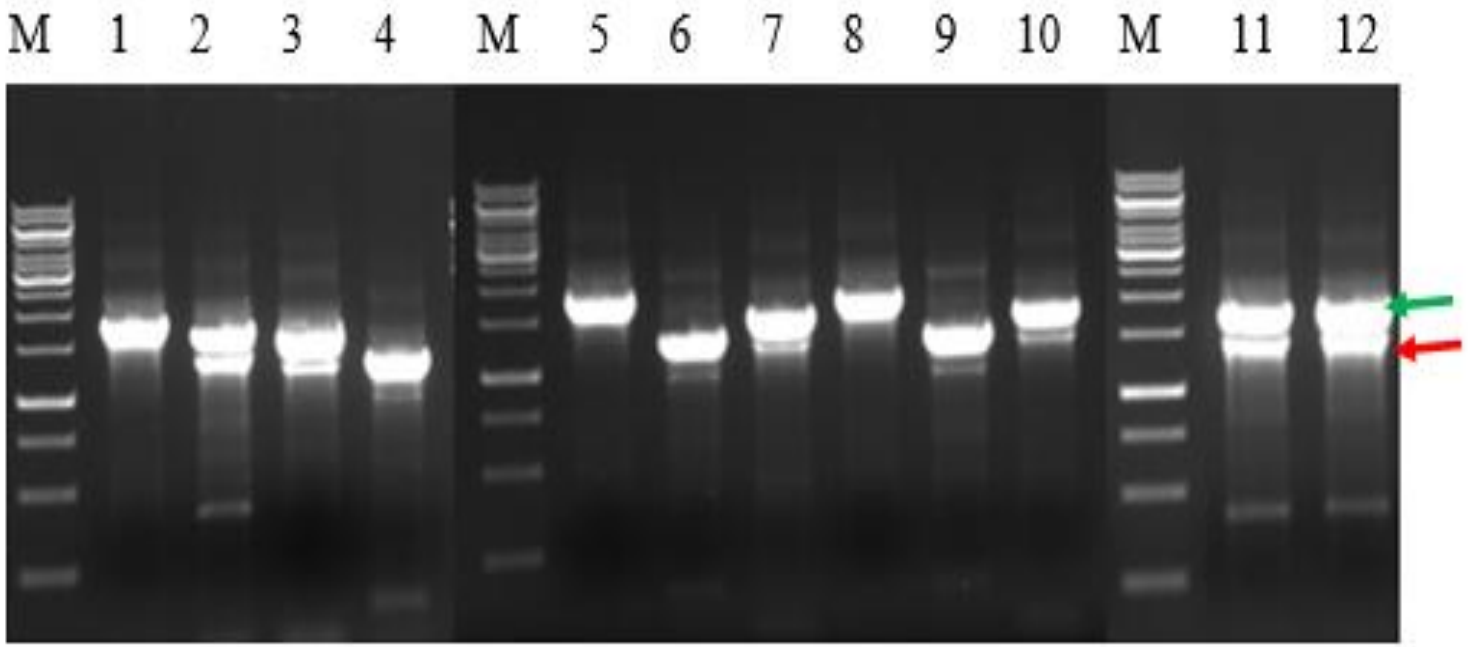


Siderophore Test



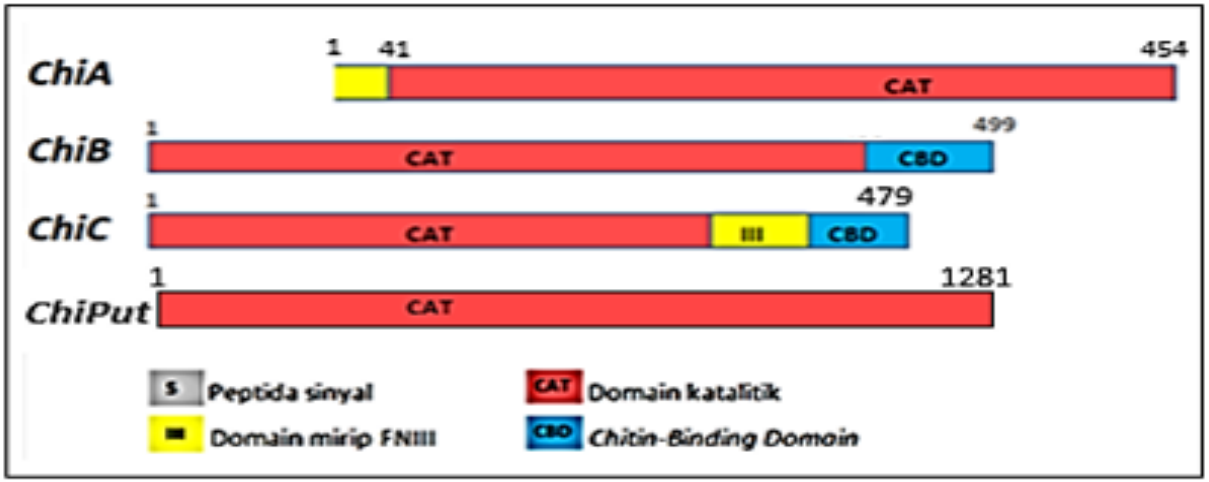
pH

Chitinase Genes Identification

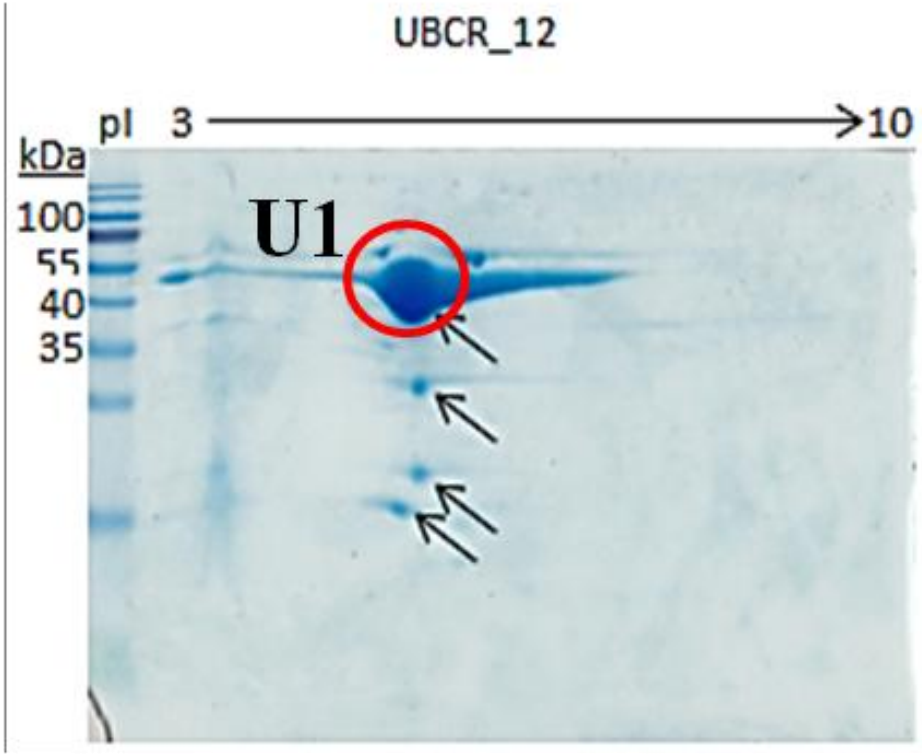


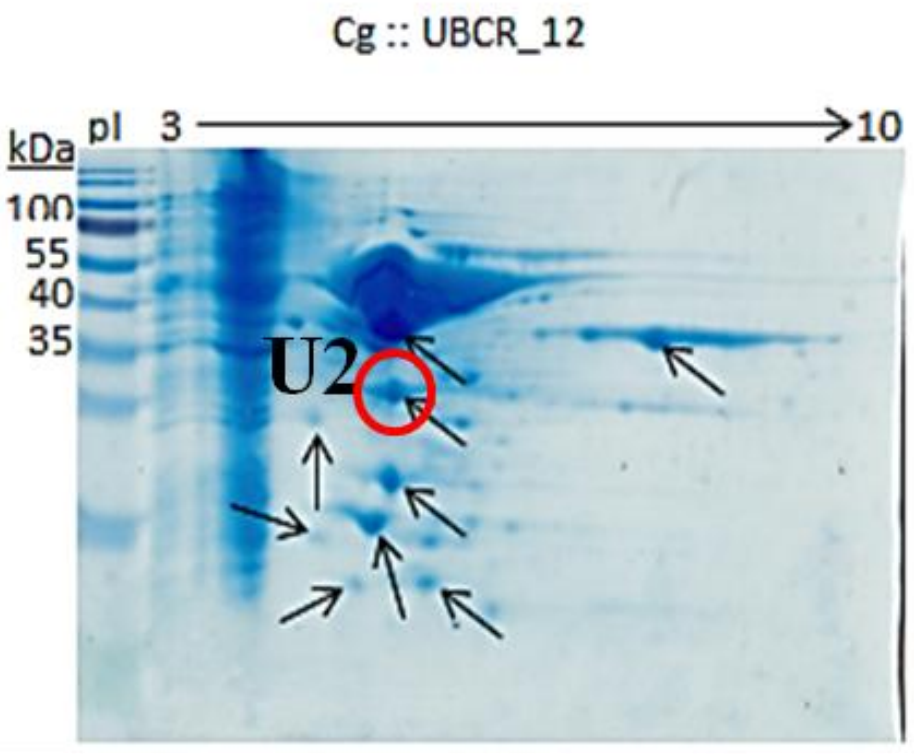
*Chi*A: 1, 5, and 8
*Chi*B: 2, 11, and 12
*Chi*C: 3, 7, and 10
*Chi*Put: 4, 6, and 9

Chitinase Genes Structure



Regulation of Antianthrachnose Production Mechanism





2D –Proteom Analysis

Regulation of Antianthrachnose Production Mechanism

Titik protein: *U1 - kultur tunggal UBCR_12 (40-55 kDa)*

```
WP_013813464.1 ref|WP_013813464.1| MULTISPECIES: flagellin n=1 Tax_Id=613 [Serratia]
I3AH44         tr|I3AH44|Q5A_14589 I3AH44_SERPL Flagellin domain-containing protein n=3 Tax_Id=1154756 [Serratia plymuthica PRI-2C]
WP_033634968.1 ref|WP_033634968.1| flagellin n=2 Tax_Id=615 [Serratia marcescens]
839841349      gi|839841349|gb|KMJ13666.1| flagellin n=1 Tax_Id=615 [Serratia marcescens]
WP_042880080.1 ref|WP_042880080.1| flagellin n=2 Tax_Id=106590 [Cupriavidus necator]
```

Protein hits	**Estimasi ukuran (kDa) / pI**	*Protein sequence coverage (%)*
Multispecies: Flagellin (Serratia)	± 43 / 4,87	35
Flagellin domain containing protein – S. plymuthica PRI-2C	43,114 / 4,83	25

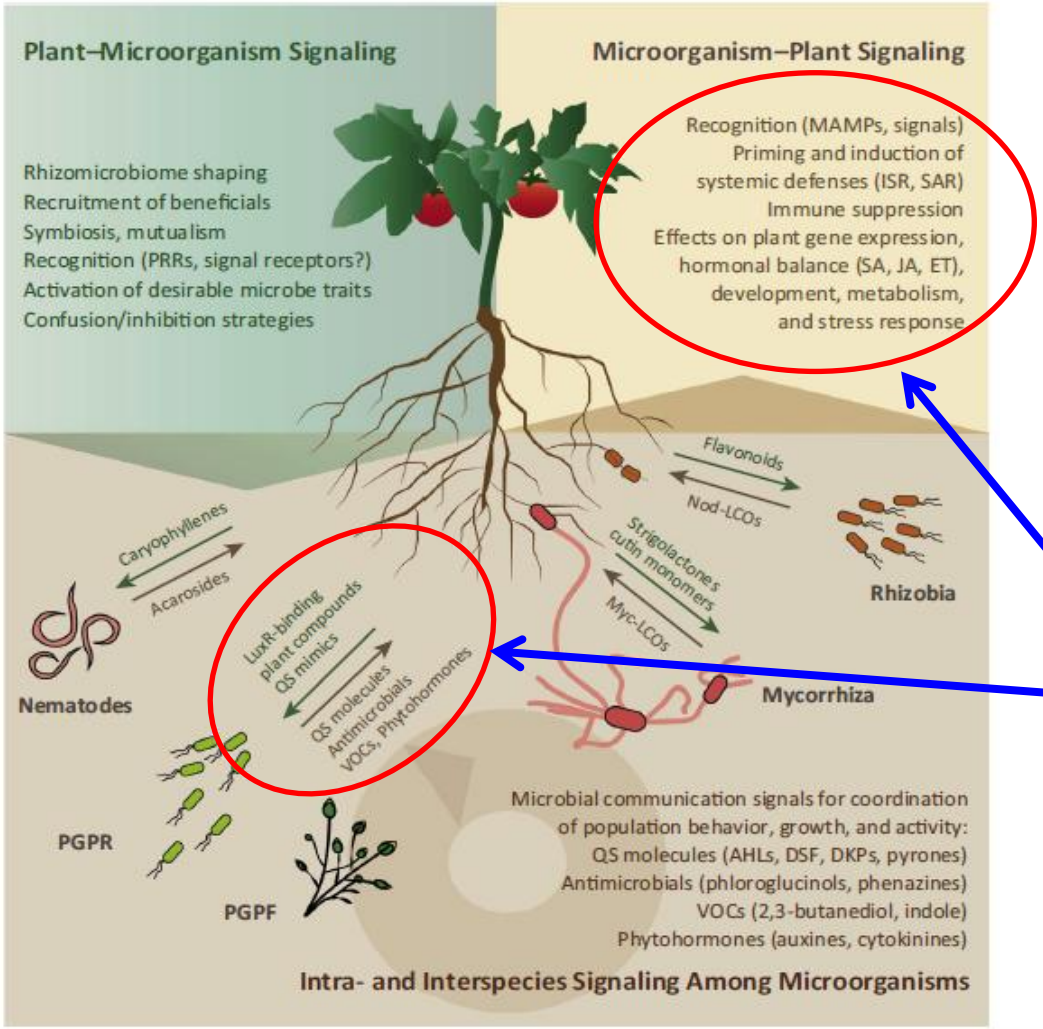
Titik protein: *U2 – ko-kultur UBCR_12 dan C. gloeosporioides (28-30 kDa)*

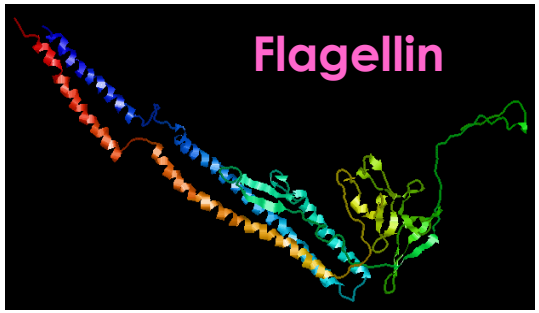
```
S0AGY6     tr|S0AGY6|fliC S0AGY6_SERPL Flagellin n=3 Tax_Id=682634 [Serratia plymuthica 4Rx13]
A0A095UBS7 tr|A0A095UBS7|HA49_13830 A0A095UBS7_9ENTR Flagellin n=3 Tax_Id=642227 [Tatumella morbirosei]
```

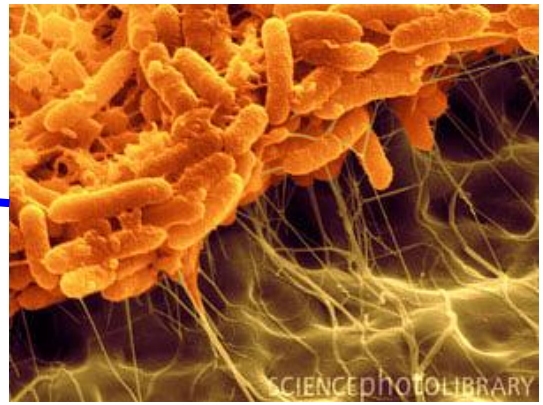
Protein hits	**Estimasi ukuran (kDa) / pI**	*Protein sequence coverage (%)*
Flagellin (FliC) – S. plymuthica 4Rx13	43,148 / 4,95	20

MALDI-TOF Spot Analysis

Role of Flaggellin in Molecular Communication Involving between Microbe and Plant.

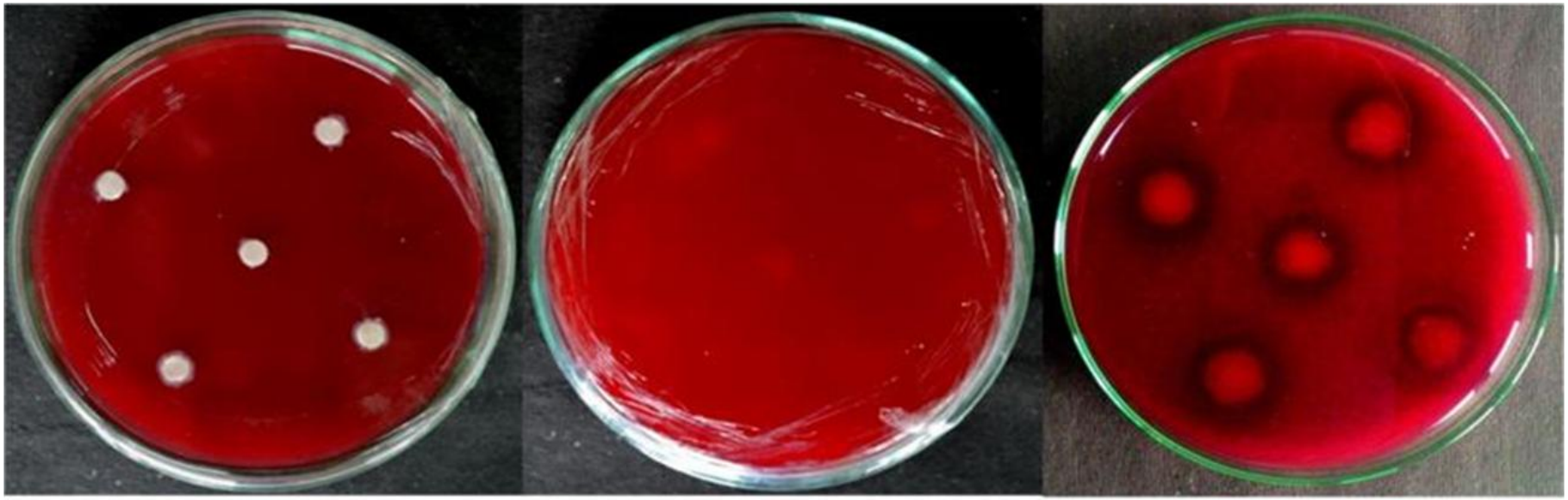






Flagellin

Hemolytic Test of UBCR_12



Believed:

1. As a major causes in many human diseases (pulmolysis)

2. Reported could be dominant in the nature

CLOSING REMARKS

Closing Remarks

- In spite of its high potential capacity as antianthrachnose as well as antifungal agents for other phytopathogens, the pathogenic potential of the isolate for environmental and human should be taken into consideration for mass application of the *Serratia plymuthica* UBCR_12.

- Non living cell application as antianthrachnose (antifungal) of the isolate might be “wise decision” for sustainable agricultural practices

Acknowledgement

Research Team

Dr. Siti Nur Aisyah, SP.
Dr. Elly Syafriani, SP.
Lily Syukriani, SP. MP.
Dr. Ir. Alfi Asben, MP.
Rahmi Kamelia, Msi
Rhaudatul Fatiah, SP.
Destia Mardhotillah
Tika Runifah

Funding Resources

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Contract Number: 059/SP2H/LT/DRPM/IV/2017 - Fiscal Year 2017

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Thank You

September 19th, 2017

Dear Mr/Mrs/Miss. **Jamsari Jamsari**

On behalf of the 2017 International Workshop and Conference on Inter-professional Education (IPE) committee, we cordially inform you that your paper entitled:

Assessment of Pathogenic Potential of Promising Antiantharachnose Rhizobacteria

has been **accepted** to be presented in the conference.

Thus, for assessment for publication in our collaborator journals, you are requested to submit the full paper via ipe2017@unhas.ac.id by September 23, 2017.

We look forward to seeing you in this 2017 International Workshop and Conference on Inter-professional Education (IPE).

Best regards,

Prof. Dr. rer.nat Marianti A Manggau Apt.

Chair of 2017 IPE