UNIVERSITI SAINS MALAYSIA

MYCORED

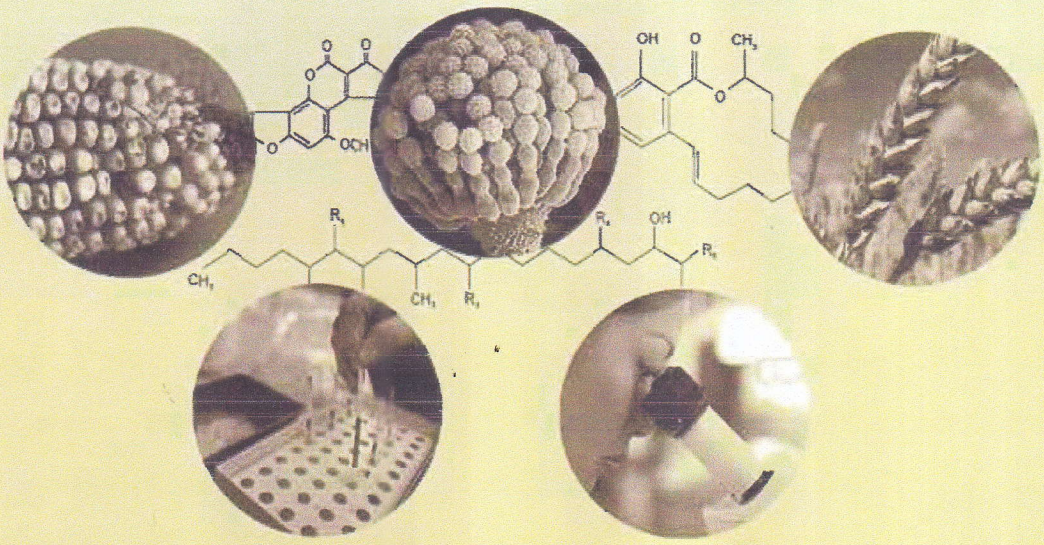
International Society for Mycotoxicology

CIMMYT

International Mycotoxin Conference

MycoRed 2010

Penang, MALAYSIA, 1 - 4 December 2010



Book of Abstracts and Programme

Global Mycotoxin Reduction Strategies: Asia and Pacific Rim

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International Mycotoxin Conference

MycoRed 2010

1 – 4 December 2010

Organised by

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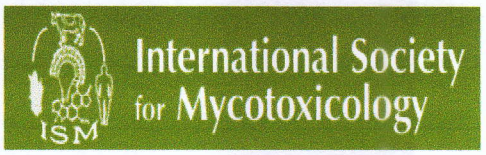

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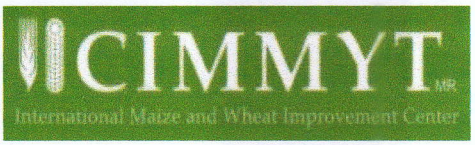

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POSTER SESSIONS

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Beauvericin production by *Fusarium* species isolated from ear rot-infected corn in Southeast Asia

Darnetty, Nur Azliza Ismail, Norlia Mahror and Nurhazrati Manshor and Baharuddin Salleh

School of Biological Sciences, Universiti Sains Malaysia, 11800 Minden, Pulau Pinang

Beauvericin is a cyclohexadepsipeptide mycotoxin that has shown insecticidal properties and widely distributed in *Fusarium* species. It occurs naturally on corn and corn-based foods and feeds infected by *Fusarium* spp. Tweenty *Fusarium* isolates belonging to four *Fusarium* species in sections Liseola isolated from ear rot–infected corn were grown on corn grits for thirty days, extracted with acetonitrile:methanol:water (16:3:1 v/v), cleaned-up through a DSC-18 coloumn and analyzed by ultra-performance liquid chromatography (UPLC) for the production of beauvericin. Results indicated that beauvericin was produced at varying concentrations by the *Fusarium* species (*F. verticillioides, F. proliferatum, F. suglutinans* and *F. konzum*) isolated from corn showing typical ear rot disease in Southeast Asia.

Beauvericin Production by *Fusarium* Species Isolated from Ear Rot-Infected Corn in South East Asia

Darnetty, Nor Azliza Ismail, Norlia Mahror, Nurhazrati Manshor, and Baharuddin Salleh.
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Introduction

Beauvericin is a cyclohexadepsipeptide mycotoxin that has insecticidal properties and widely produced by *Fusarium* species. It occurs naturally on corn and corn-based foods and feeds infected by *Fusarium* spp. Infection of maize with *Fusarium* species and its contamination by beauvericin are generally influenced by many factors including environmental conditions (climate, temperature, humidity). So far, the research on beauvericin production from *Fusarium* spp. isolated from ear rot-infected corn have not been carried out intensively in the tropical countries, including those in Southeast Asia.

Methodology

Inoculum Preparation

*Corn grits were sterilized
*Inoculated with spore suspension of *Fusarium* spp.
*Incubated for 30 days

Extraction

*15 g inoculated corn grits soaked overnight with 75 ml acetonitrile: methanol:water (16:3:1) in the dark
*Milled in a Waring blender for 5 minutes
*Filtered with Whatman No. 4
*Defatted twice with 25 ml n-hexane
*Evaporated by using a vacuum rotary evapoator 60^{o}C)
*Dissolved in 50 ml methanol: water (55:45)
*Extracted twice with 25 ml dichloromethane
*Evaporated and dissolved in 1 ml mehanol
*Kept in 1 ml bottle at 5^{o}C

Claned up

By using a C18 SPE column

Chemical analysis

by UPLC

Results and Discussion

Twenty strains of *Fusarium* belonging to four species, *F. verticillioides* (12), *F. proliferatum* (4), *F. subglutinans* (2) *and F. konzum* (2) isolated from ear rot- infected corn in Indonesia, Malaysia and Thailand were tested for beauvericin production. All strains of *Fusarium* tested produced beauvericin at different concentrations from 0.7 to 26 ug/g, except 2 strains of *F. verticillioides*. According to Desjardins (2006), many species of *Fusarium* in the *Gibberella fujikuroi* species complex produce beauvericin at varying concentrations. However, *F. verticillioides* produced little or no beauvericin. UPLC profile of BEA is shown at Fig.1.

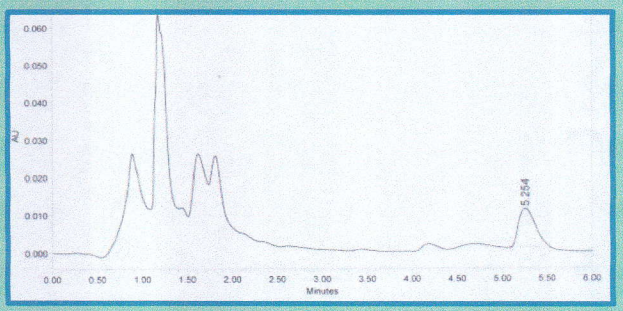

Fig 1. UPLC profile of BEA extracted from samples

Conclusion

Beauvericin was produced at varying concentrations by the four *Fusarium* species (*F. verticillioides, F. proliferatum, F. suglutinans* and *F. konzum*) isolated from corn showing typical ear rot symptoms collected from Southeast Asia.

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