

BIS

3<sup>rd</sup> NRCT-IFS Workshop:

# NRCT-IFS-MU Collaborative Research in Natural Products and Food Science

November 28 – December 4, 2013

**Selenium**  
50% of Women Are Deficient\*  
Selenium is a trace element that is vital to immune system function.

**Junk Food**  
32% of Women Are Overweight (in England)  
Low nutrition foods high in sugar and fat are one thing no deficiency in most UK women's diet. Those with an unhealthy diet may be more likely to suffer from nutritional deficiencies.

**Vitamin C**  
16% of Women Are Deficient\*

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# **3<sup>rd</sup> NRCT-IFS Workshop:**

## **NRCT-IFS-MU Collaborative Research in Natural Products and Food Science**

**November 28 – December 4, 2013  
Century Park Hotel, Bangkok, Thailand**

**[www.sc.mahidol.ac.th/IFS2013](http://www.sc.mahidol.ac.th/IFS2013)**

**Organized by**

**National Research Council of Thailand (NRCT)**

**International Foundation for Science (IFS)**

**Mahidol University(MU)**

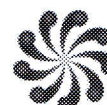
**Center of Excellence for Innovation in Chemistry (PERCH-CIC)**



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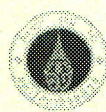
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### Oral presentation

*Chairperson: Prof. Vatcharin Rukachaisirikul, Prince of Songkla University, Thailand*

10.30-10.50 **O5: “The Use of Multivariate Graphical Methods, and Feeding Types of Macro-benthic Structure in Assessing Environmental Disturbance: Temperate versus Tropical Regions”**

*by Dr. Sapto Purnomo Putro*

*Diponegoro University, Indonesia*

10.50-11.10 **O6: “Optimization of Process Parameters in the Production of Bacterial Cellulose (nata-de-coco) by *Acetobacterxylinum*”**

*by Mr. Alwani Hamad*

*Muhammadiyah University Purwokerto, Indonesia*

11.10-11.30 **O7: “ $\alpha$ -Mangostin – A Potential Anti-Biofilm Agent against *Streptococcus mutans* UA159”**

*by Dr. Phuong T. M. Nguyen*

*Vietnamese Academic of Science and Technology, Vietnam*

11.30-11.50 **O8: “Viability of Probiotics in Spray-dried Mango Juice Powder”**

*by Mrs. Dao Thi Anh Thu*

*University of Danang, Vietnam*

11.50-13.00 LUNCH

*Chairperson: Assoc. Prof. Parichat Hongsprabhas, The Thailand Research Fund*

13.00-14.30 **Panel Discussion (PD): “Scholarship Programs for Regional Research Collaborations”**

*by Ms. Watinee Kharnwong*

*Deputy Director, Australian Education International, Australian Embassy*

*Representative from the Embassy of France to Thailand*

*Representative from the Embassy of Sweden to Thailand*

*Mr. Wattanwit Gajaseni*

*Director, Countries Partnership Branch (Bilateral and Trilateral), Thailand International Development Cooperation Agency*

### Oral presentation

*Chairperson: Assoc. Prof. Somdej Kanokmedhakul, Khon Kaen University, Thailand*

14.30-14.50 **O9: “Investigation of Antimicrobial, Anticancer and Antioxidant Secondary Novel Metabolites from Lichens and Their Endophytes from High Altitude Regions of Nepal”**

*by Dr. Hari Datta Bhattarai*

*Principle Investigator, Research Institute for Bioscience and Biotechnology, Nepal*

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[www.sc.mahidol.ac.th/IFS2013](http://www.sc.mahidol.ac.th/IFS2013)

# The Use of Multivariate, Graphical Methods, and Feeding Types of Macro-benthic Structure in Assessing Environmental Disturbance: Temperate versus Tropical Regions

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## Introduction and Objective

This study is aimed to assess the effectiveness of multivariate analyses and distributional/ graphical techniques in assessing the response of macrobenthic assemblages to environmental disturbance caused by fish farming, comparing temperate and tropical regions.

## Methods

The biotic datas were used from samples taken under southern blue-fin tuna farms in southern Spencer Gulf, South Australia, and under floating net cage at Rawapening Lake, and under fish impoundment at coastal region of Demak District, Central Java, Indonesia. Principal Component Analysis (PCA) and Non Metric Multi-Dimensional Scaling (NMDS) were used for analysis the abiotic and biotic datas, respectively. Abundance-Biomass Comparison (ABC) curves were employed to detect the level of disturbance.

## Results

The results showed that the use of multivariate analyses and distributional/graphical techniques are effective to assess the severity of disturbance, owing to sensitive response of macrobenthic assemblages to environmental disturbance that made it possible to detect effects of farming activities. The ordination of MDS and ABC curves showed consistently with W statistic and H' index values in assessing the status of the area in that both tropical and temperate regions. They clearly separated the disturbed and undisturbed areas, whether in spatial and temporal, thus the methods may be applied at temperate and tropical regions.

## Conclusion

Seasonal fluctuations caused by natural variability, hydrodynamic conditions, sediment characteristics, and organic matter are likely to be responsible for the observed changes of the assemblages over the study period. The use of multivariate analyses and distributional/graphical techniques are effective to assess the severity of disturbance, owing to sensitive response of macrobenthic assemblages to environmental disturbance that made it possible to detect effects of farming activities.

**Keywords:** macrobenthic assemblages, ABC curves, multivariate analyses, graphical method, environmental disturbance, fish farming.

## Selected References:

1. Gao, Q. F., Cheung, K. L., Cheung, S. G., and Shin, P. K. S. *Marine Pollution Bulletin*, vol. 51, pp. 994-1002,
2. Modica, A., Scilipoti, D., La Torre, R., and Manganaro, A. *Estuarine, Coastal and Shelf Science*, 2006, 66, 177-184.
3. Putro S.P. *J. Coast. Dev.*, 2009, vol 12, pp. 146-152,.



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