



International Conference on  
Food, Agriculture and Culinary Tourism  
2015



# ICEFACT 2015

## Announcement from The ICEFACT 2015 Committee

Dear Sir/Madam,

We are pleased to announce that the ICEFACT 2015 Conference will be held in Samarinda, Indonesia, from 4 to 6 August 2015. The conference will focus on the theme of 'Food, Agriculture and Culinary Tourism'.

The ICEFACT 2015 Conference is a biennial event that brings together leading experts and practitioners in the field of food, agriculture and culinary tourism. The conference provides a platform for the exchange of ideas, knowledge and best practices, and offers a unique opportunity for networking and collaboration.

### **International Conference on Food, Agriculture and Culinary Tourism**

**Samarinda, 4 – 6 August 2015**

The ICEFACT 2015 Conference is a biennial event that brings together leading experts and practitioners in the field of food, agriculture and culinary tourism. The conference provides a platform for the exchange of ideas, knowledge and best practices, and offers a unique opportunity for networking and collaboration.

The ICEFACT 2015 Conference is a biennial event that brings together leading experts and practitioners in the field of food, agriculture and culinary tourism. The conference provides a platform for the exchange of ideas, knowledge and best practices, and offers a unique opportunity for networking and collaboration.

ICEFACT 2015  
Samarinda, 4 – 6 August 2015

**Paper 3:**  
The impact of intervention feeding parenting women on nutritional status of children in the Village Sangkima Kutai National Park East Kutai (Bernatal Saragih)

**Paper 4:**  
The potential of indigenous lactic acid bacteria isolated from spontaneous fermented goat milk as candidate probiotic bacteria (Alfriza Yelnetty)

**Paper 3:**  
Plant sterols as functional food and its genetic study (Nurbasmit)

**Paper 4:**  
Determination of Endo- $\beta$ -Glucanase Molecular Weight and CMCase Activity of Cellulase Producing Actinomycetes Using SDS-Page and Zymogram Electrophoresis (Hamka Nurkaya)

**DETERMINATION OF ENDO- $\beta$ -GLUCANASE MOLECULAR WEIGHT AND CMCASE ACTIVITY OF CELLULOSE PRODUCING ACTINOMYCETES USING SDS-PAGE AND ZYMOGRAM ELECTROPHORESIS**

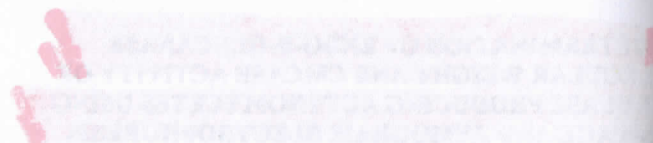
**Hanka Nurkaya<sup>1</sup> and Salpin Chaiyanan<sup>2</sup>**

<sup>1</sup> *Politeknik Pertanian Negeri Samarinda, Samarinda 75131, Indonesia, hanka\_nurkaya@yahoo.com*

<sup>2</sup> *Department of Microbiology, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand, saipin.cha@kmutt.ac.th*

**Abstract**

This research aimed to determine of endo- $\beta$ -glucanase molecular weight and CMCASE activity of cellulase producing actinomycetes using SDS-page and Zymogram electrophoresis with the utilize of oil palm empty fruit bunch (OPEFB) as medium for the production of cellulase. A potential of using OPEFB to accelerate cellulase production by cellulolytic microorganism was tested. The high cellulase producing actinomycetes isolate 12.3.A that was isolated from the Microbiology Department of King Mongkut's University of Technology Thonburi, Thailand was used in this study. The isolate 12.3.A was preliminary appointed to be *Streptomyces hirsutus* from the result of 16S rRNA gene analysis. The optimal conditions for cellulase production of *S. hirsutus* isolate 12.3.A were determined. The best yields were derived from culturing the cells at pH 7, 30°C, and substrate concentration at 1% for 8 days. The highest cellulase activity from OPEFB as a medium was 0.71 U/mg respectively. The suitable nitrogen source for the culture medium made of OPEFB was ammonium sulfate, respectively. The partial purification of cellulase was shown specific activity from ammonium sulfate precipitation was raised as 3.74 Units/mg and for cellulase purified by dialysis was 7.38 U/mg. The zymogram assay with polyacrylamide amended with Carboxymethyl cellulase (CMC) demonstrated that the isolate 12.3.A produced a band of CMCASE (endo- $\beta$ -glucanase) which had shown a clear zone area on



Theresa N. ...  
Department of ...  
University of ...

Abstract  
The study of ...  
cellulase activity ...  
at 30°C ...  
with a ...  
molecular weight ...  
of 47.84 kD ...

Meanwhile the molecular weight of endo- $\beta$ -glucanase was 47.84 kD with a SDS-page as tested method.  
**Keywords:** endo  $\beta$ -glucanase, molecular weight, CMCase, oil palm empty fruit bunch, *Streptomyces hirsutus* isolate 12.3A, cellulase activity

Cellulase is an enzyme that breaks down cellulose into glucose. It is produced by various microorganisms, including fungi and bacteria. The study of cellulase activity is important for understanding the role of these enzymes in the degradation of plant cell walls. In this study, the molecular weight of endo- $\beta$ -glucanase was determined using SDS-PAGE. The results showed that the molecular weight of the enzyme was 47.84 kD. This finding is significant because it provides information about the structure and function of the enzyme. The enzyme was also tested for its activity on CMC (Carboxymethyl Cellulose) and oil palm empty fruit bunch (OPEFB). The results showed that the enzyme was able to degrade both substrates. This suggests that the enzyme has a broad substrate specificity. The study also identified *Streptomyces hirsutus* isolate 12.3A as a source of cellulase activity. This isolate was found to produce high levels of cellulase activity, making it a potential candidate for industrial applications. The study concludes that endo- $\beta$ -glucanase from *Streptomyces hirsutus* isolate 12.3A is a highly active and specific cellulase. Further research is needed to optimize the enzyme for industrial use.