ICBS

Faculty of Biology Universitas Gadjah Mada

Program And Abstracts Book

ICBS BIOUGM

International Conference on Biological Science

ADVANCES IN BIOLOGICAL SCIENCE:
Respect to Biodiversity from Molecular to Ecosystem
for Better Human Prosperity

FACULTY OF BIOLOGY UNIVERSITAS GADJAH MADA
YOGYAKARTA - INDONESIA
October, 16th - 17th 2009

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OPENING REMARKS FROM THE RECTOR UNIVERSITAS GADJAH MADA

Distinguished guests, ladies and gentlemen

On behalf of the Gadjah Mada University, I wish to congratulate and express my gratitude to the Faculty of Biology UGM and to the Organizing Committee of the International Conference on Biological Science ***(ICBS) 2009: Advances in Biological Science: Respect to Biodiversity from Molecular to Ecosystem for Better Human Prosperity*** for succeeding this conference. My sincere thanks are also addressed to Director of DP2M, Directorate of Higher Education, Ministry of National Education, Republic of Indonesia, Prof. Dr. Sangkot Marzuki from Eijkman Institute for Molecular Biology as a keynote speaker, all invited speakers to support this conference.

Biology is a core of fundamental science and the contribution of applied biology sector on the national economic development for Indonesia needs to be strengthened through the effort of developing prospective domestic and export of potential biodiversity and biotechnology products as mentioned in this conference theme. We still have some problems in biodiversity and biotechnology sector and that is why, this conference is now being conducted.

I wish, the meeting will be successfully bring the audience to exchange and brainstorm the scientific knowledge in order to provide valuable results for supporting the national biodiversity and biotechnology development. I also strongly hope that some ideas produced in this conference will be applied for practical application of biology in Indonesia in the near future.

Thank you and have a nice conference

Prof. Dr. Ir. Sujarwadi, M.Eng.
The Rector of Universitas Gadjah Mada
Yogyakarta, Indonesia

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- Dr. Retno Peni Sancayaningsih, M.Sc. (Dean of The Faculty of Biology, UGM, Indonesia)
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- Prof. Dr. Santosa (Universitas Gadjah Mada, Indonesia)
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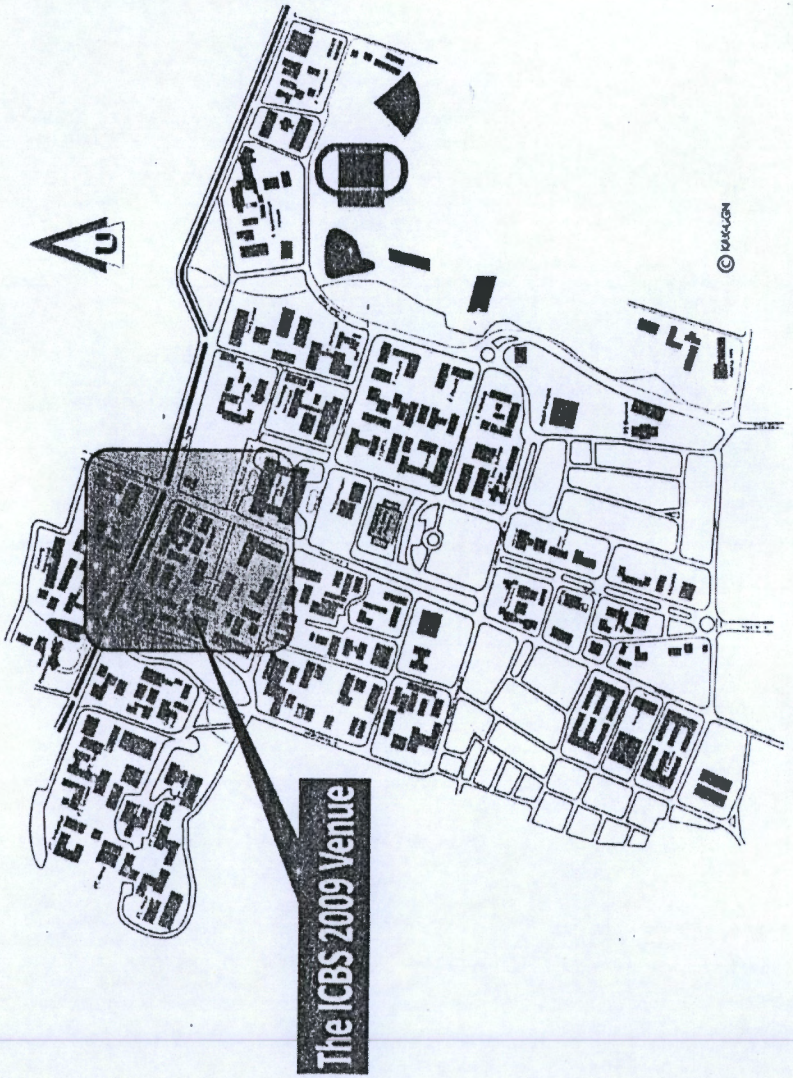
SITE MAP

Universitas Gadjah Mada Map



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(ICBS 2009 BIO-UGM)
ADVANCES IN BIOLOGICAL SCIENCE:
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for Better Human Prosperity

Institute for Research and Community Services Universitas Gadjah Mada, Yogyakarta, Indonesia

PT. Fajar Mas Murni Semarang, Indonesia

ILLUMINA PT. Pandu Anugerah Analitika, Indonesia

Drs. H. Maryadi Broto Suwandi, M.Kes Yogyakarta, Indonesia

Prima Grafika Yogyakarta, Indonesia

Argus Optical Yogyakarta, Indonesia

BTKL (Balai Teknik Kesehatan Lingkungan) Yogyakarta. Indonesia

PROGRAM OUTLINE
FRIDAY, OCTOBER 16, 2009

TIME	PROGRAM	VENUE
07.00-08.00	Registration of Participants	Auditorium Magister Management Building UGM
08.00-08.45	Opening Ceremony **Faculty of Biology Student Choir** **Dr. Maryani, M.Sc.** (Chair Person of Organizing Committee) **Dr. Retno Peni Sancayaningsih, M.Sc.** (Dean, Faculty of Biology, UGM) **Prof. Ir. Sudjarwadi, M.Eng., Ph.D.** (Rector, Universitas Gadjah Mada) **Prof. Dr. Ir. Suryo Hapsoro Tri Utomo, M.Eng.** (Director of research and community service, Directorate General for higher Education, Department of National Education)	
Plenary Session 1 Moderator: **Drs. Langkah Sembiring, M.Sc., Ph.D.**		Auditorium Magister Management Building UGM
08.45-09.30	**Keynote Speaker** **Prof. Dr. Sangkot Marzuki** Eijkman Institute for Molecular Biology, Indonesia	
09.30-09.45	Coffee Break	
Plenary Session 2 Moderator: **Prof. Dr. Jusup Subagja, M.Sc.**		
09.45-10.15	*Plant biodiversity inventory in Indonesia: parataxonomists, barcoding and the Semantic Web* **Prof.Dr.Cambell O. Webb** Harvard University, USA	
10.15-10.45	*Buah Merah (Pandanus conoidues Lamk.): Potency Against Cancer Cells* **Prof. Dr. Sukarti Moeljoprawiro, M.App.Sc.** Faculty of Biology, Universitas Gadjah Mada	
10.45-13.00	**Lunch Break**	Lecture Room IV Faculty of Biology UGM
13.00-13.30	**Poster Session 1**	Laboratories Hallway, Building A, 1st Floor
13.30-15.00	**Thematic Oral Presentation**	Lecture and Seminar Rooms Faculty of Biology UGM
15.00-15.15	**Coffee Break**	
15.15-16.30	**Thematic Oral Presentation**	

SATURDAY, OCTOBER 17, 2009

IME	PROGRAM	VENUE
8.00- 08.15	**Indonesia Traditional Dance**	Auditorium Magister Management Building UGM
lenary Session 3 **loderator: Dr.Tjut Sugandawati Djohan, M.Sc.**		
8.15-08.45	*Cytokinin Biosynthesis Pathway and Its Regulation: How Do Plants Regulate Their Growth and Development by Cytokinin Actions?* **Prof. Dr. Hitoshi Sakakibara** RIKEN Plant Science Center, Yokohama, Japan	
8.45-09.15	*Indonesia's Worsening Biodiversity Crisis and Possible Solutions* **Dr. Richard Noske** School of Environmental and Life Sciences, Charles Darwin University, Darwin, Northern Territory, Australia	
9.15-09.30	Coffee Break	
lenary Session 4 **loderator: Dr. Endang Semiarti, M.S., M.Sc.**		Auditorium Magister Management Building UGM
9.30-10.00	*Molecular Mechanisms of Leaf Development in Arabidopsis thaliana* **Prof. Dr. Chiyoko Machida** Plant Biology Research Center. Chubu University, Japan	
0.00-10.30	*Regulation of Plant Cell Division: A Mechanism of M Phase Progression* **Prof. Dr. Yasunori Machida** Division of Biological Science, Graduate School of Science, Nagoya University, Japan	
0.30-11.00	*Creation of High Sucrose Yield of Sugarcane Cultivars Through Genetic Engineering* **Prof. Ir. Bambang Sugiharto, M.Agr.Sc.** Research Center for Molecular Biology, Faculty of Mathematic and Natural Sciences, University of Jember	
1.00-11.30	*Inovating for The Future Of Genetic Analysis: Genotyping & Sequencing* **Fajar Reza Budiman MBA** PT Pandu Anugerah Analitika ILLUMINA Indonesia	
1.30-13.00	**Lunch Break**	Lecture Room IV Faculty of Biology UGM
3.00-13.30	**Poster Session 2**	Laboratories Hallway, Building A, 1st Floor

P-BM04

THE ESTROGENIC EFFECT OF ETHANOL EXTRACT OF ADAS (*Foeniculum vulgare* Mill.) IN RAT (*Rattus sp.*)

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The research was conducted to study the effect of ethanol extract of adas/fennel fruits *(Foeniculum vulgare Mill.)* in rats. Thirty of female rats, 16 weeks old and 200 gram of body weight were used in this experiment. The animals were grouped into five groups, each consisted of six animals. Group I (negative control) was given aquadest, group II (positive control) was given 9 x 10^{-3} mg/ 200g BW of ethynil estradiol (Lynoral), group III, IV and V were given ethanol extract of adas at the dose of 0,97; 1,94; 3,88 g/ 200 g BW respectively. Treatments were given oraly every day for seven days period. Parameters observed were the length of estrus cycle, uterus vascularisation, the weight and histopathology picture of the ovary and the uterus during pro-estrus phase. The result showed that group IV which was given 1,94 g/200 g BW of extract lengthtened the period of estrus cycle significantly compared to negatif control group. Group V which was given 3,88g/ 200 g BW of extract showed increase in vascularisation in the uterus, and the ethanol extract of adas at this dose had the similar effect with ethynile estradiol in the icreasing of the ovaries and the uterus weight. The highest of the endometrial thickness was found in group V (dose of 3,88 g /200 g BW) and the highest amount of uterus glands was in group I (0,97g/200g BW), however, of all the treated doses showed no effect in increasing follicle developing in the ovary.

Keywords: phytoestrogen, ethanol extract of adas, estrus cycle

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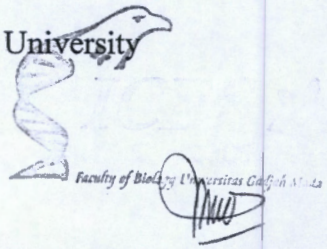

Introduction

Studies and research on phytoestrogens lately intensified, particularly since the invention of phytoestrogens constituent in soybeans in a significant amount for overcoming problems arising from menopause. Fennel fruits (*Foeniculum vulgare* Mill.) is one of the Indonesian biodiversity that used to be utilized as spice, is known to have phytoestrogen compound of lignan group, which is called trans-anethol (Murkies *et al.* 1998). Several previous studies have been conducted on the properties of fennel are oestrogenic (Malini *et al.* 1985; Cosge *et al.* 2008), however, a thorough exploration of the fennel still needs to be done, especially related to the type and origin of fennel, its impact on reproductive organs and the other target organs of estrogen in macro and micro perspective that hopefully later can be used as a basis for further studies on fennel. The research was designed to study the estrogenic effect of fennel fruit on the length of estrous cycle, vascularisation of ovary and uterus, change in ovarium and uterus weight as well as its histological picture in female rats.

Materials And Methods

Ethanol extract of fennel fruit was obtained through the process of maceration of 200 g of simplicia fennel powder dissolved with 2 L of ethanol 70% for 24 hours. Collected macerat was then evaporated by using *rotary evaporator* at 30-40°C until thick extract formed. Thirty adult e female rats, 2 weighing about 200-250 g were used for this research. These animals were grouped into 5 groups with 6 individuals for each group and treated as follows: Group I (Negative Control Group) was given aquabidest, Group II (Positive Control Group) was given ethynil estradiol (Lynoral) with the dose of 4.5×10^{-5} mg/kg of BW, Group III, IV and V were treated with ethanol extract of fennel fruit with the dose of 4.85 g/kg of BW, 9.70 g/kg of BW and 19.40 g/kg of BW respectively. Treatments were given oraly every morning for 7 days period, started and finished when the animal was in estrus phase. The phase of estrus cycle was determined through vagina smear examination. At the end of treatments, the animals were killed for ovary and uterus collection. Immediately after collection, organs were put in *Buffer Normal Formalin* (BNF) solution 10% until processed to prepare materials for histological examination. In general, parameters observed were 1) Length of estrous cycle included the related phases, 2) Vascularisation of ovary and uterus, 3) Change of ovary and uterus weight and 4) Histological picture of ovary and *bifurcatio utery* of the uterus.

Results and Discussion

Results obtained showed that the length of estrous cycle in Group I was 95 h, in Group II was 105 h, in Group III, IV and V were 90 h, 124 h, and 112 h respectively. When examining from each phase, extended estrous cycle phase resulted from the extension of proestrous and estrous phases. The highest increase in vascularisation as well as ovary and uterus weight were found in Group V (at the dose of 19.40 g/kg of BW). The increase in vascularisation was thought to be due to the estrogenic effect of fennel fruit which at the time of estrus, it increased blood pressure in the capillaries surrounding the reproductive organs, especially the ovaries and uterus (Liu *et al*. 2000). Based on ovarian histology observation, it was seen that there was follicle developing process in estrous phase as well as vascularisation of this reproductive organ, nevertheless, the rate of the change in follicle growth was not affected by the Lynoral or fennel extracts in various doses. Primordial, primary, secondary, tertiary and de Graf follicles did not show any significant increase in line with the increase in the amount of extracts given. An increase of estrogen level in estrous phase does not directly affect the length of estrous cycle, but can enhance follicular development so that there are many mature follicles in the ovary and this will cause more estrogen secreted and tends to prolong the estrous cycle (Liu *et al.* 2000). The highest of endometrium thickness was found in Group V (at the dose of 19.40 g/kg of BW), while the amount of uterus gland was highest in Group I (at the dose of 4.85 g/kg of BW) and tended to decrease with the increase of extract doses. This is in accordance with the statement of Mills (2007) that during the initial period of proliferation, that is in proestrous phase, the rate of tissues development and endonetrium glands will increase. The decrease in the amount seemed to be dosage dependent and might be due to the negative feedback mechanism through hypothalamus-hypophyse axis as well as anti-estrogenic effect after the optimum dosage reached. These all finding represented estrogenic effect of ethanol extract of fennel fruit on reproductive organs of female rats in productive age and further research in prepubertal and menopause periode will be such a valuable study to be carried out.

Acknowledgments

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