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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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- Prof. Dr. Santosa (Universitas Gadjah Mada, Indonesia)
- Prof. Dr. Issirep Sumardi (Universitas Gadjah Mada, Indonesia)
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- Prof. Dr. Chiyoko Machida (Chubu University, Japan)
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- Dra. Ratna Susandarini, M.Sc.
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- drh. Hendry T.S.S.G. Sarqijih, M.P.
ACKNOWLEDGMENT

The following personal and organization are gratefully acknowledged for supporting this International Conference on Biological Science (ICBS 2009 BIO-UGM)

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

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

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Argus Optical Yogyakarta, Indonesia

ITKL (Balai Teknik Kesehatan Lingkungan) Yogyakarta, Indonesia

FACULTY OF BIOLOGY UNIVERSITAS GADJAH MADA
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<td>Indonesia Traditional Dance</td>
<td>Auditorium</td>
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<td>8.15-08.45</td>
<td><strong>Plenary Session 3</strong>&lt;br&gt;<strong>Moderator:</strong> Dr. Tjut Sugandawati Djohan, M.Sc.</td>
<td>Magister Management Building UGM</td>
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<td>8.45-09.15</td>
<td>Cytokinin Biosynthesis Pathway and Its Regulation: How Do Plants Regulate Their Growth and Development by Cytokinin Actions?&lt;br&gt;<strong>Prof. Dr. Hitoshi Sakakibara</strong>&lt;br&gt;RIKEN Plant Science Center, Yokohama, Japan</td>
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<td>9.15-09.30</td>
<td>Coffee Break</td>
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<td>9.30-10.00</td>
<td><strong>Plenary Session 4</strong>&lt;br&gt;<strong>Moderator:</strong> Dr. Endang Semlart. M.S., M.Sc.</td>
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<td>10.00-10.30</td>
<td>Molecular Mechanisms of Leaf Development in Arabidopsis thaliana&lt;br&gt;<strong>Prof. Dr. Chiyoko Machida</strong>&lt;br&gt;Plant Biology Research Center, Chubu University, Japan</td>
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<td>10.30-11.00</td>
<td>Regulation of Plant Cell Division: A Mechanism of Mitosis Progression&lt;br&gt;<strong>Prof. Dr. Yasunori Mechida</strong>&lt;br&gt;Division of Biological Science, Graduate School of Science, Nagoya University, Japan</td>
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<td>11.00-11.30</td>
<td>Creation of High Sucrose Yield of Sugarcane Cultivars Through Genetic Engineering&lt;br&gt;<strong>Prof. Ir. Bambang Sugiharto, M.Agr.Sc.</strong>&lt;br&gt;Research Center for Molecular Biology, Faculty of Mathematics and Natural Sciences, University of Jember</td>
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<td>11.30-12.00</td>
<td>Innovating for The Future Of Genetic Analysis: Genotyping &amp; Sequencing&lt;br&gt;<strong>Fejar Reza Budiman MBA</strong>&lt;br&gt;PT Perdu Anugrah Analitika &amp; LUMINA, Indonesia</td>
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<td>12.00-13.00</td>
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<td>Poster Session 2</td>
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15.00-15.15 Coffee Break | Lecture and Seminar Rooms Faculty of Biology UGM |
15.15-16.30 Thematic Oral Presentation | Seminar Room Faculty of Biology UGM |
16.30-17.00 Closing Ceremony<br>1. Dr. Maryani, M.Sc. Chair Person of Organizing Committee 2. Dr. Retno Peni Sancayaningisih, M.Sc. Dean, Faculty of Biology UGM |
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 ofadas/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 ethynyl estradiol (Lynoral), group III, IV and V were given ethanol extract of adas at the dose of 0.97; 1.94; 3.68 g/200 g BW respectively. Treatments were given orally 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 1,94g/200 g BW of extract lengthened the period of estrus cycle significantly compared to negative 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 increasing 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

SCREENING OF ANTIBACTERIAL AND CYTOTOXIC ACTIVITY FROM SPONGES AND SOFT CORALS KEPULAUAN SERIBU, INDONESIA

Ifah Munifah and Sugiyono

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Living benthic marine organism such as sponge and soft corals are frequently equipped with natural chemical defense compounds to combat the microbial attack. The defense mechanism of these organisms is performed through the production and accumulation of secondary metabolites which has antimicrobial activities. This study was to reveal bioactive compound in methanol extracts from sponges and soft corals which were collected from 3 different sampling locations at Kepulauan Seribu, Indonesia. This study was preliminary work to explore the antibacterial of marine organism especially sponges and soft coral samples with consideration toward the environmental parameters influencing antimicrobial activity. Methanol extracts from forty six samples were screened for antibacterial activity against Escherichia coli, Salmonella typhosa, Pseudomonas aeruginosa, Staphylococcus aureus, Bacillus subtilis, and Streptococcus mutan. The methods chosen for determined the antibacterial activity was agar disk diffusion method using chloramphenicol as the comparative antibiotic standard. The Results showed that several extracts tends to have broad spectrum antimicrobial activity.

Keywords: sponges, soft corals, antimicrobial activity, environmental parameters
THE ESTROGENIC EFFECT OF ETHANOL EXTRACT OF ADAS (*Foeniculum vulgare* Mill.) IN RATS (*Rattus* sp.)

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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 ovariun and uterus weight as well as its histological picture in female rats.

**Materials And Methods**

Ethanot 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 x 10⁻³ mg/kg of BW, Group III, IV and V were treated with ethanot 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 orally 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 ovariun 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 endometrium 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 period will be such a valuable study to be carried out.

Acknowledgments

The research was supported by Hibah Fundamental Research Grant 2008. Grateful expression goes to Erika, Ikhsan, Meylan, Rita, Setiawan, and the technicians at the Physiology and Pharmacology Laboratory FVM IPB (Edy Sukma, Wawan, Ida and Sri).
References
Cosge B., Kirahan M., and Gurbuz B. 2008. Characteristics of fatty acids and essential oil from sweet fennel (Foeniculum vulgare Mill. var. dulce) and bitter fennel fruits (Foeniculum vulgare Mill. var. vulgare) growing in Turkey. Natural Product Research 22(12):1011-6.


