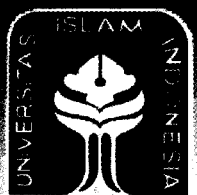
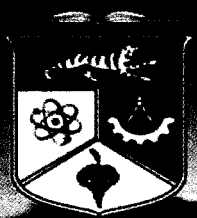


# Proceeding

The First International Conference on Science and Technology

# ICSTES 2000

*The Challenge of Sciences in a Global  
Warming Era: Issues and Opportunities  
for a Better Life*



19-21 Jan January 21 - 23, 2000

at Kebayoran Baru, Jakarta, Universitas Islam Indonesia

www.icstes2000.org

## **Welcoming Address by the Organizing Committee**

Honorable Rector of Universitas Islam Indonesia  
Honorable Vice Chancellor of Universiti Kebangsaan Malaysia  
Honorable Vice Chancellor of Universiti Malaysia Terengganu  
Distinguished invited speakers, participants, ladies and gentlemen,

Welcome you at the First International Seminar on Science and Technology (ISSTEC 2009) this morning here at the Auditorium Kahar Muzakkir Universitas Islam Indonesia, Jogjakarta, Indonesia. These seminars jointly organized are Faculty of Mathematics and Natural Sciences UII, Faculty of Science and Technology UKM and Faculty of Science and Technology UMT, Terengganu.

The international seminar is attended by more than 1000 participants, come from all over Indonesia, Malaysia, Iraq, Yemen, Japan and Australia. We invited 5 Indonesian invited and keynotes speakers and 3 invited speakers come from Malaysia. There are 300 papers to be presented orally and 47 papers presented by poster covering wide-variety subjects of sciences and technology like mathemati

Honorable Minister of Research and Technology of Indonesia  
Honcs, statistics, chemistry, pharmacy, computer sciences, physics, biology and engineering.

We thank for organizing committee, especially for UKM and UMT. Finally, we would also like to thank Rector of Universitas Islam Indonesia, Vice Chancellor of Universiti Kebangsaan Malaysia and Vice Chancellor of Universiti Malaysia Terengganu for his support to this seminar.

We hope you will enjoy a pleasant and valuable seminar at Universitas Islam Indonesia.

Chairman,  
Riyanto, Ph.D.

## **Opening speech from the Rector of Universitas Islam Indonesia**

Assalamu 'alaikum Wr.Wb.

The honorable Minister of Research and Technology of Indonesia  
The distinguished invited speakers, and  
All the participants of the ISSTEC 2009

Firstly, I would like to express my great appreciation to the Faculty of Mathematics and Natural Sciences UII as the organiser of this first International Seminar on Science and Technology (ISSTEC 2009) with the theme “The Challenge of Science in a Global Warming Era: Issues and Opportunities for a Better Life”. I am proud that the first meeting of this interesting event is being organized and held in Yogyakarta.

As the biggest and the oldest private university in Yogyakarta, Universitas Islam Indonesia is committed to the excellence in research and teaching. Recently, we are preparing UII as one of the world class universities.

Knowing that committee has selected outstanding speakers from various prestigious institutions, I believe that all of the participants will enjoy the discussion of issues covered by the topic of this seminar. Scientists have shown that the earth's climate is changing dramatically, and human industrial activities and the burning of fossil fuels are largely to blame. Climate change is a crisis we caused together, therefore, a responsibility we all share together. We are deeply concerned with the issues and opportunities in the internationalisation of sciences for better life, sciences have to go green.

Finally, I would once again like to thank the organiser for organising this event, and to thank all the participants attending this ISSTEC 2009 event as well as delivering their scientific presentations. I do really hope that you can enjoy this seminar and have excellent stay in Yogyakarta.

Wassalamu 'alaikum Wr.Wb.

Yogyakarta, March 24, 2009

Prof. Dr. Edy Suandi Hamid, M.Ec.  
Rector of Universitas Islam Indonesia

## **Opening speech from the Vice Chancellor of Universiti Kebangsaan Malaysia**

Assalamualaikum wbt. dan Salam Sejahtera

I would like to congratulate the Faculty of Science & Technology, which has taken the initiative in organizing the joint ISSTEC seminar with Universitas Islam Indonesia (UII), concurrent with FST's 10th Anniversary in 2009. This initiative parallels UKM's aspiration to promote academic research collaboration between UKM academic staffs and colleagues from various institutions at national, regional and international levels.

The seminar theme of “The Challenge of Sciences in a Global Warming Era: Issues and Opportunities for a Better Life” is consistent with a research niche of UKM in response to the problem of climate change. Climate change and its enormous impact on life should alert everybody, particularly scientists. The global warming issue has an across-dimension effect in life and its betterment. Thus, through this seminar, I believe collaboration, knowledge sharing and research experiences in this field will be benefited. I also believed this seminar will open up wider opportunities, while crossing academic, management and student borders.

It is hoped that UKM will start the collaboration work on this very day, and continue on to soon strengthen it with wider participation from academicians of various disciplines. This is due to knowledge approach to overcome recent demands unity and perspective from various disciplines. It is hoped that this seminar will fulfill its objectives, which have been outlined by the joint organizers, UKM & UII.

Sekian.

Prof. Dato' Dr. Sharifah Hapsah Syed Hasan Shahabudin  
Vice Chancellor  
Universiti Kebangsaan Malaysia

## **Opening speech from the Vice Chancellor of Universiti Malaysia Terengganu**

Firstly, I would like to express my utmost appreciation to the organizers and congratulate them for The First International Seminar on Science and Technology 2009. This seminar is the first activity after the signing of MOU on 7 August 2008. As citizens of today's modern world, we have to contribute to developments and the latest discoveries in knowledge and technology. Therefore we need to prepare ourselves to think and compete globally.

UMT has strived very hard to enhance its Key Performance Indicators (KPI) in order to face the challenges of globalization. Therefore UMT puts a lot of effort to alleviate research grants, increase journal publications, employ lecturers with PhD qualification, increase of international students intake, and also signing more MOUs with other universities. In 2008 alone, UMT had received 41 research grants valued at RM6.9 million as compared to only 37 research grants valued RM4.13 million in 2007. Recently, UMT researchers excelled in their achievements at the British Innovation Show 2008 (BIS). This indicates that UMT is now at par with the other well known universities in Malaysia.

To date, UMT has signed MOUs and MOAs with 18 foreign universities. University of Bergen, James Cook University, Kagoshima University, University of South Brittany France, Penn State University and Prince of Songkhla University just to name a few.

In August 2010, the Department of Mathematics UMT shall hold the 5th International Conference on Mathematics and Statistics with the collaboration of Moslem Mathematicians and Statisticians Society in South East Asia. It would be my great pleasure to invite all of you to come and join the conference. Your active participation is a prerequisite for the success of the upcoming conference.

Last but not least, I would like to thank the organizers for their hard work, the plenary speakers and participants for their valuable contributions.

I wish you all the best and enjoy the seminar!

Thank you.

Prof. Dato' Dr. Sulaiman bin Md Yassin

Vice Chancellor  
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# Stimulant Effect of Decocta of Pasak Bumi (*Eurycoma longifolia*. Jack) Root Powder by Natatory Exhaustion at Male Mice

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## Abstract

The stimulant effect of decoct of Pasak Bumi (*Eurycoma longifolia*, Jack) Root powder by natatory exhaustion at male mice were investigated. The Pasak Bumi (Indonesia) usually use for cured many disease, *i.e* antipyretic, rheumatism, tonic, headache, aphrodisiac *etc*. The part of the plant of Pasak Bumi that used were root, and it is boiled with water. The plant contain of guassinoid, erycomanine, eurycomanone, eurycomalactone, *etc*. The compounds can be increasing testosterone hormone, so it can be used as aphrodisiac. The stimulant effect of Pasak Bumi was performed by using male mice. There were 6 groups (5 mice in once group). The mice given kinds of treatment : group I (distillated water 0.5 ml/20 g BW), group II (decoct 5 %, 0.5 ml/20 g BW), group III (decoct 10 %, 0.5 ml/20 g BW), group IV (decoct 20%, 0.5 ml/20 g BW), group V (decoct 40 %, 0.5 ml/20 g BW), group VI (caffeine 0.1 mg/g BW), by orally. Every mice was entered in the box contain the water and it was conducted measurement of exhausted time, before and after treatment. The result indicated that treatment with, distillated water, decoct of Pasak Bumi 5%, 10%, 20%, and 40%, and caffeine 0.1 mg/ g BW, showed increasing exhausted time, 0.91%, 35.42%, 56.97%, 76.75%, 101.84%, and 74.14%, respectively. The conclusion of this research, decoct of Pasak Bumi can be increasing exhausted time, increasing concentration will be increasing stimulant effect. There were no significant differences between decoct 10% and 20% with caffeine 0.1 mg/ g BW.

**Keywords:** Pasak Bumi, stimulant, Natatory exhaustion

## Introduction

Radix *Eurycoma Longifolia* Jack. (figure 1) or also called 'Long Jack' originated from the Borneo Tropical Forests. *Eurycoma longifolia* commonly known as "Pasak Bumi in Indonesia" and "Tongkat Ali" in Malaysia, is a well known herb that is used traditionally for its properties of increasing energy and male vitality. The medicinal benefits are primarily found and used in the root. It has a bitter taste but the nutrients it contains are excellent for normalizing blood pressure, treats arthritis, quells dysentery, jaundice, alleviates fever, skin itchiness, external haemorrhages, headaches, and impotence. It is also beneficial to the kidneys by cleanses the kidney from toxins and boosting its function. By the same time, it also rejuvenates manly prowess. Long term usage of this herb may be effective in treating hypertension, diabetes and uric acid. *Eurycoma longifolia* for its high medicinal value. How the concoction worked for them is difficult to explain, but many swear by its close to supernatural benefits.

The plant is traditionally used as a general tonic, after childbirth tonic, aphrodisiac, antidotal, antihypertensive, antipyretic, antituberculous, antivenous, vermifuge and febrifuge. It is also used to relieve pains in the bone and itches and to treat jaundice, dropsy, cachexia, fever, diarrhoea,

indigestion, lumbago and dysentery. The root of this plant is used as one of the main ingredients in preparing jamu and tonic as health preparations used in Indonesia traditional medicine. The water extract of *Eurycoma longifolia* is believed to increase male vitality.

*Eurycoma longifolia*, commonly known As "Tongkat Ali" or "Longjack," is often touted as a testosterone "booster" and marketed to athletes as a training aid and performance enhancer. Rodent studies have shown oral delivery of *Eurycoma* extract to improve sexual performance and increase serum testosterone levels. Open-label human trials have suggested that *Eurycoma* extract may help prevent age-associated androgen deficiency, improve sexual function, and increase psychological parameters such as mood, energy, and sense of well-being.



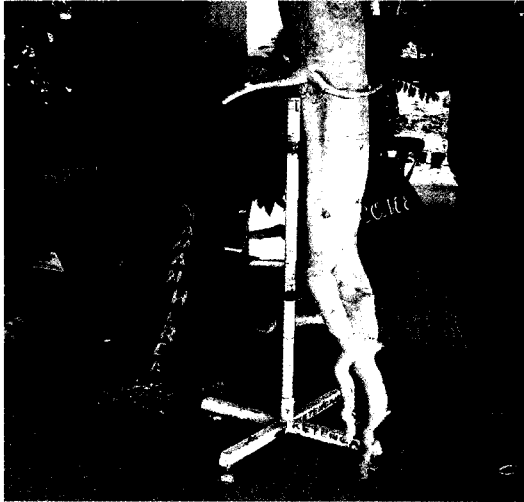


Figure 1. The *Eurycoma longifolia* Jack

The *Eurycoma longifolia*, contain of guassinoid, eurycomaosid, eurycomanine, eurycomanone, eurycomalactone, etc (figure 2).

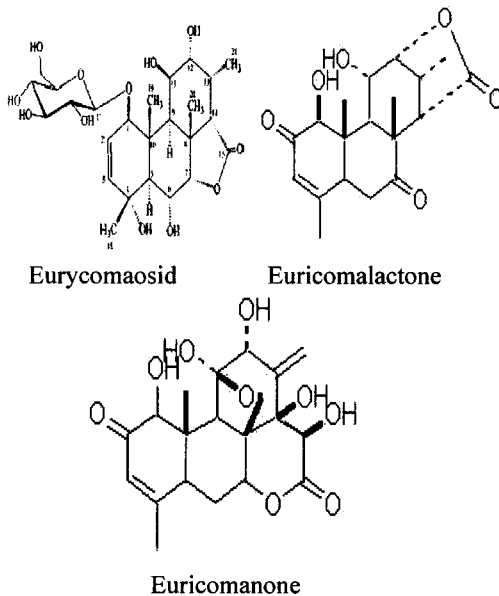


Figure 2. The compounds in *Eurycoma longifolia* Jack

## Materials and Methods

### Material

## Results and Discussion

The data of exhausted time can be seen at table 1. The percentage of stimulant effect can be seen at table 2

The powder of "Pasak Bumi" (*Eurycoma longifolia* Jack) root, from Banjarmasin Kalimantan Selatan Indonesia. Caffeine (E merck).

Male mice Swiss strain, age 2-4 months, and the weight 20-40 g, from LPPT UGM Yogyakarta.

The glass box which size length 50 cm, width 30 cm, and high 25 cm.

The pan to make decoct.

### Method

There were four concentrations of "Pasak Bumi" decoct, 5%, 10%, 20%, and 40%. The decoct 5% is made by fill in the pan 5 g of powder and 100 ml of water plus water 2 times weight of powder, boiled 30 minutes in 90 degrees Celsius, and filtered at the hot condition.

There were 6 groups (5 mice in each group) given kinds of treatment :

Group I : Distillated water, 0.5 ml/20 g BW

Group II : decoct 5%, 0.5 ml/20 g BW

Group III : decoct 10%, 0.5 ml/20 g BW

Group IV : decoct 20%, 0.5 ml/20 g BW

Group V : decoct 40%, 0.5 ml/20 g BW

Group VI : caffeine 0.1 mg/g BW

### Stimulant effect test

Every mice was entered in the box contain the water and it was conducted measurement of exhausted time, before and after treatment.

Mice was swum till show the tired condition, that is there no reaction move from fourth of its foot, body position hunchbacked, tail stretch and let part of its head reside in the water level during 4-7 second. Exhausted time was measured by since mice packed into the water till happened fatigue. This is first exhausted time (before treatment).

Mice taken a rest during 30 minutes, dried by towel and given the warm air with the hair dryer. then mice given the treatment by per oral, is it let during 15 minute, then is it re-swum, and re-measured its exhausted time (second exhausted time/ exhausted time after treatment).

$$\% \text{ Stimulant effect} = \frac{b - a}{a} \times 100\%$$

a : exhausted time before treatment

b : exhausted time after treatment

**Table 1. The data of exhausted time before and after treatment at mice in every group**

Group	Exhausted time of each group											
	I		II		III		IV		V		VI	
	a	b	a	b	a	b	a	b	a	b	a	b
1.	4.17	4.32	2.15	3.11	4.56	6.47	3.39	6.12	4.08	8.52	3.10	5.12
2.	3.57	3.54	3.03	4.29	3.57	4.30	3.39	6.38	5.02	10.18	4.26	5.20
3.	3.16	4.22	2.39	3.17	4.04	7.08	4.13	7.30	5.37	10.37	2.57	5.04
4.	3.55	3.40	3.43	4.14	2.48	3.52	5.23	8.42	5.53	8.04	4.09	7.11
5.	4.10	4.31	3.33	4.09	2.50	4.22	3.30	7.28	4.56	9.24	4.41	7.12

a : exhausted time before treatment  
 b : exhausted time after treatment  
 group I : Distillated water, 0.5 ml/20 g BW  
 group II : decoct 5%, 0.5 ml/20 g BW  
 group III : decoct 10%, 0.5 ml/20 g BW  
 group IV : decoct 20%, 0.5 ml/20 g BW  
 group V : decoct 40%, 0.5 ml/20 g BW  
 group VI : caffeine 0.1 mg/g BW

**Table 2. The percentage of stimulant effect of every group.**

No	Stimulant Effect (%)
1.	0.91 ± 2.13
2.	35.42 ± 4.90
3.	56.97 ± 8.79
4.	76.75 ± 5.76
5.	101.84 ± 3.25
6.	74.11 ± 7.77

The Natatory exhaustion method can be conducted to screening of pharmacology effect. This method can be conducted to know the effect of drug that can be done on the coordination of the motion. This method can be used to test the stimulant effect of the stimulant drug for the animal test.

The stimulant effect can be known based on increasing the exhaustion time during the mice were swim. Caffeine was used as standard, because caffeine is stimulant of nerve system, and increasing psychic energinezer. Caffeine also have effect to heart palpitate.

From the data can be seen that increasing concentration of decoct Pasak Bumi, 5%, 10%, 20% and 40%, respectively will improve the percentage of stimulant effect were 35.42%, 56.97%, 76.75%, and 101.84% respectively. The stimulant effect of caffeine 0.1 mg/g BW, is 74.11%.

There are no significant difference between decoct Pasak Bumi 10 %, and 20% with caffeine 0.1 mg/g BW.

### Conclusion

The Decoct Pasak Bumi has stimulant effect. The decoct of Pasak Bumi can be increasing exhausted time, increasing concentration will be

increasing stimulant effect. The stimulant effect of decoct Pasak Bumi 10% and 20% were not significant difference with caffeine 0.1 mg/g BW.

**Table 3. The result of one way anova of all the group**

(I)kode (J)kode	Mean diff (I-J)	Std. Error	Sig.
1,00 2,00	-34,51000*	8.36749	,001
3,00 4,00	-56,05750* -75,84250*		,000 ,000
5,00	-		,000
6,00	100,92500*		
2,00 3,00	-73,22750* -21,54750*		,000 ,019
4,00 5,00	-41,33250* -66,41500*		,000 ,000
6,00	-		,000
3,00 1,00	38,71750* 56,05750*		,000 ,000
2,00 4,00	21,54750* -19,78500*		,019 ,029
5,00 6,00	-44,86750* -17,17000		,000 ,055
4,00 2,00	75,84250* 41,33250*		,000 ,000
3,00 5,00	19,78.500* -25,08250*		,029 ,008
6,00	2,61500		,758
5,00 2,00	100,92500* 66,41500*		,000 ,000
3,00 4,00	44,86750* 25,08250*		,000 ,008
6,00	27,69750*		,004
6,00 2,00	73,22750* 38,71750*		,000 ,000

3,00	17,17000	,055
4,00	-2,61500	,758
5,00	-27,69750*	,004

\*the mean difference is significant at the .05 level

## Acknowledgements

The author would like to thank Rudian Fariani Noor who send Pasak Bumi root from Banjarmasin and Laela Hayu Nuraini who give the structure of the compound. The author would also like to thank to Harvita Afriyani and Kusmiyati for helping the research.

## References

- Anonim, 1985.** *Cara pembuatan simplisia*, hlm 1-27, Departemen Kesehatan Republik Indonesia, Badan peneliti dan Pengembangan Kesehatan
- Mutschler, E., 1986,** *Dinamika obat: Buku ajar Farmakologi dan Toksikologi*, edisi V, diterjemahkan oleh : Widiyanto, MB., dan Ranti, As., hlm 156-159, ITB, Bandung.
- Talbott S, Talbott J, Negrete J, Jones M, Nichols M, and Roza J.** Effect of *Eurycoma longifolia* Extract on Anabolic Balance During Endurance Exercise. Supplement Watch, Inc. Draper, UT & Source One Global Partners, Chicago, IL
- Taufic, Z.N, Nurfina Az, 2006,** *Skripsi*, Efek stimulan fraksi larut air ekstrak etanol biji kola (*Cola nitida* Schott & Endl) dengan metode displacement of sand and Natatory Exhaustion pada mencit jantan. Fakultas Farmasi Universitas Muhammadiyah Surakarta
- Turner, R.A., 1965** *Screening Methods in Pharmacology*, p. 74-77, 179-181, academic Press, Inc., New York.