

**UNIVERSITI SAINS MALAYSIA
PROJEK PENYELIDIKAN JANGKA PENDEK
LAPORAN AKHIR**

**THE EFFECT OF 'GAMAT' ON
NOCICEPTIVE PROCESSING IN THE
CENTRAL NERVOUS SYSTEM**

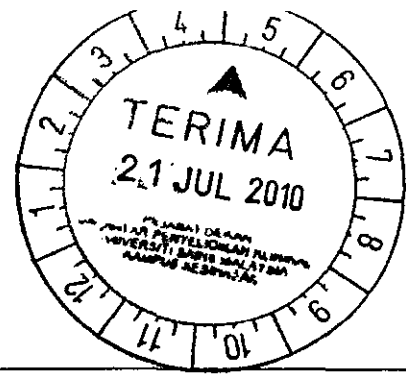
PENYELIDIK

DR. CHE BADARIAH AB. AZIZ

PENYELIDIK BERSAMA

**DR. ASMA HAYATI
PROF. ZALINA ISMAIL**

06
—



Sedutan Minit Mesyuarat JKP-39 (07.Julai.2010)

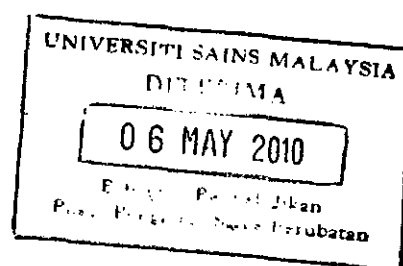
1.	Dr. Che Badariah Ab. A. Aziz (Jab. Fisiologi) The Effects of 'Gamat' on Nociceptive Processing in the Central Nervous System (Laporan Akhir)	Laporan Akhir Geran USM Jangka Pendek kajian ini diperakukan.
----	--	--

SENARAI SEMAKAN UNTUK BUKU LAPORAN AKHIR GERAN USM JANGKA PENDEK

NAMA PENYELIDIK UTAMA	: Dr Che Badariah Ab Aziz
NAMA CO-RESEARCHER	: Dr Asma Hayati dan Prof Zalina Ismail
TAJUK GERAN	The effects of "gamat" on nociceptive processing in the central nervous system
NO.AKAUN	304/PPSP/6131465 ✓

SENARAI SEMAKAN SEMASA PENYERAHAN BUKU LAPORAN AKHIR
(Sila Tandakan (4) Pada Kotak Yang Berkenaan)

NO.	PERKARA	ADA	TIADA
1.	Borang Laporan Akhir Projek Penyelidikan USM Jangka Pendek	✓	
2.	Borang Laporan Hasil Penyelidikan, PPSP	✓	
3.	i) Salinan Menuskrip	✓	
	ii) Salinan surat/email bukti penghantaran kepada mana-mana journal	✓	
4.	Penyata Perbelanjaan (Financial Statement) (Sila dapatkan daripada Jabatan Bendahari)	✓	
5.	Laporan Komprehensif (termasuk kertas persidangan atau seminar dan penerbitan saintifik hasil daripada projek ini)	✓	
6.	Surat pemakluman penghantaran Laporan Akhir ke Bhg. Penyelidikan	✓	



SENARAI SEMAKAN UNTUK BUKU LAPORAN AKHIR GERAN USM JANGKA PENDEK

NAMA PENYELIDIK UTAMA : Dr Che Badariah Ab Aziz			
NAMA CO-RESEARCHER : Dr Asma Hayati dan Prof Zalina Ismail			
TAJUK GERAN The effects of "gamat" on nociceptive processing in the central nervous system			
NO.AKAUN : 304/PPSP/6131465 ✓			
SENARAI SEMAKAN SEMASA PENYERAHAN BUKU LAPORAN AKHIR (Sila Tandakan (4) Pada Kotak Yang Berkenaan)			
NO.	BERKAS	ADA	TIADA
1.	Borang Laporan Akhir Projek Penyelidikan USM Jangka Pendek	✓	
2.	Borang Laporan Hasil Penyelidikan, PPSP	✓	
3.	i) Salinan Menuskrip	✓	
	ii) Salinan surat/email bukti penghantaran kepada mana-mana Journal	✓	
4.	Penyata Perbelanjaan (Financial Statement) (Sila dapatkan daripada Jabatan Bendahari)	✓	
5.	Laporan Komprehensif (termasuk kertas persidangan atau seminar dan penerbitan saintifik hasil daripada projek ini)	✓	
6.	Surat pemakluman penghantaran Laporan Akhir ke Bhg. Penyelidikan	✓	

LAPORAN GERAN JANGKA PENDEK

NAMA PENYELIDIK UTAMA:
DR CHE BADARIAH AB AZIZ

NAMA PENYELIDIK BERSAMA:
DR ASMA HAYATI AHMAD DAN PROF ZALINA ISMAIL

TAJUK GERAN:
THE EFFECTS OF "GAMAT" ON NOCICEPTIVE
PROCESSING IN THE CENTRAL NERVOUS SYSTEM

NO AKAUN:
304/PPSP/6131465

TEMPOH:
30 SEPTEMBER 2006 HINGGA 29 SEPTEMBER 2009



LAPORAN AKHIR PROJEK PENYELIDIKAN JANGKA PENDEK

FINAL REPORT OF SHORT TERM RESEARCH PROJECT

Sila kemukakan laporan akhir ini melalui Jawatankuasa Penyelidikan di Pusat Pengajian dan Dekan/Pengarah/Ketua Jabatan kepada Pejabat Pelantar Penyelidikan

1. Nama Ketua Penyelidik: <i>Name of Research Leader:</i> Othman Badarudin AB Aziz			
☐ Profesor Madya / <i>Assoc. Prof.</i>			
☒ Dr / <i>Dr.</i>			
☐ Encik / Puan / Cik / <i>Mr / Ms / Mrs</i>			
2. Pusat Tanggungjawab (PTJ): <i>School/Department</i> Pusat Pengajian Sains Perubatan/Fisiologi			
3. Nama Penyelidik Bersama: Dr Asma Hayati Ahmad dan Prof Zalina Ismail <i>Name of Co-Researcher:</i>			
4. Tajuk Projek: The effects of "gamat" on nociceptive processing in the central nervous system <i>Title of Project</i>			
5. Ringkasan Penilaian: <i>Summary of Assessment</i>	Tidak Mencukupi <i>Inadequate</i>	Boleh Diterima <i>Acceptable</i>	Sangat Baik <i>Very Good</i>
			4 5
i) Pencapaian objektif projek: <i>Achievement of project objectives</i>	☐ ☐	☒	☐ ☐
ii) Kualiti output: <i>Quality of outputs</i>	☐ ☐	☒	☐ ☐
iii) Kualiti impak: <i>Quality of impacts</i>	☐ ☐	☒	☐ ☐
iv) Pemindahan teknologi/potensi pengkomersialan: <i>Technology transfer/commercialization potential</i>	☐ ☐	☒	☐ ☐
v) Kualiti dan usahasama: <i>Quality and intensity of collaboration</i>	☐ ☐	☒	☐ ☐
vi) Penilaian kepentingan secara keseluruhan: <i>Overall assessment of benefits</i>	☐ ☐	☐	☒ ☐

6. Abstrak Penyelidikan

(Beru-disediakan diantara 100- 200 perkataan di dalam Bahasa Malaysia dan juga Bahasa Inggeris. Abstrak ini akan dimuatkan dalam Laporan Tahunan Bahagian Penyelidikan & Inovasi sebagai satu cara untuk menyampaikan dapatan projek tuan/puan kepada pihak Universiti & masyarakat luar)

Abstract/Research

(An abstract of between 100 and 200 words must be prepared in Bahasa Malaysia and in English).

This abstract will be included in the Annual Report of the Research and Innovation Section at a later date as a means of presenting the project findings of the researcher to the University and the community at large.

As attached

7. Sila sediakan laporan teknikal lengkap yang menerangkan keseluruhan projek ini.

[Sila gunakan kertas berasingan]

Applicant are required to prepare a Comprehensive Technical Report explaining the project.

(This report must be appended separately)

Senaraikan kata kunci yang mencerminkan penyelidikan anda:

List the key words that reflects your research:

Bahasa Malaysia

Formalin

Talamus

Holothuria spp

Bahasa Inggeris

Formalin

Thalamus

Holothuria spp

8. Output dan Faedah Projek

Output and Benefits of Project

(a) * Penerbitan Jurnal

Publication of Journals

(Sila nyatakan jenis, tajuk, pengarang/editor, tahun terbitan dan di mana telah diterbitkan/diterbitkan)
(State type, title, author/editor, publication year and where it has been published/submitted)

Journal article, The effects of intraperitoneal administration of holothuria extracts on pain behaviour in acute pain model, Shamsul Kamalrulan Hassan, Chendrasekhar, A. B. and Razli Waziman, 2010, Pain

- (b) Faedah-faedah lain seperti perkembangan produk, pengkomersialan produk/pendaftaran paten atau impak kepada dasar dan masyarakat.
State other benefits such as product development, product commercialisation/patent registration or impact on society and society.

Tiada

* Sila berikan salinan/Kindly provide copies

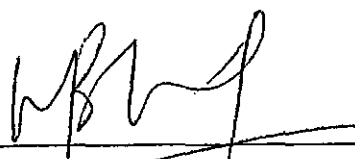
- (c) Latihan Sumber Manusia
Training in Human Resource

- i) Pelajar Sarjana:
Graduates Student
(Sila incikan nama, ijazah dan status)
(Provide names, degrees and status)

Dr. Mohd Faizli bin Wagiman
MMed (Anesthesiology)
Dissertation submitted and passed

- ii) Lain-lain:
Others
Mohd Eidham Yusoff
Bachelor of Health Science (Biomedicine)
Graduated

9. Peralatan yang Telah Dibeli: TIADA
Equipment that has been purchased


Tandatangan Penyelidik
Signature of Researcher

26/4/2010
Tarikh
Date

Komen Jawatankuasa Penyelidikan Pusat Pengajian/Pusat
Comments by the Research Committees of Schools/Centres

The project has been successfully completed and objective achieved. The output of the project include a M. Med (Anesthesiology) presentation, a DSc (Anesthesiology) project and a publication submission to Pain and Management on 23 April 2010 titled "The effect of intravenous administration of ketorolac on pain behaviour in an acute pain model."

The report has been assessed by an independent assessor and approved by the PTJ research committee

PROFESSOR AHMAD SUKARI HALIM
Chairman of Research Committee
School of Medical Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian, Kelantan.

TANDATANGAN PENGURUSI
JAWATANKUASA PENYELIDIKAN
PUSAT PENGAJIAN/PUSAT
Signature of Chairman
[Research Committee of School/Centre]

19/7/10
Tarikh
Date

BORANG LAPORAN HASIL PENYELIDIKAN
PPSP

Tajuk geran: The effects of "gamat" on nociceptive processing in the central nervous system

Penyelidik: Dr Che Badariah Ab Aziz

Jenis geran: Geran Penyelidikan Jangka Pendek

Tempoh geran: 3 tahun

Jenis laporan: Laporan Kemajuan ☐ Alatan di beli ☐ Ya: nyatakan.....

Laporan Akhir*: ☒ Tidak ☒

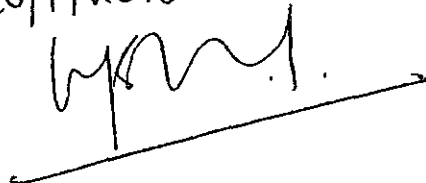
OBJEKTIF SPESIFIK KAJIAN (sama spt dalam proposal asal)	SECARA RINGKAS TERANGKAN PENCAPAIAN/HASIL	OBJEKTIF TERCAPAI ATAU TIDAK
1. To determine the effects of gamat on c-fos expression in the spinal cord and thalamus in control rats, in the absence of painful stimulation.	At the initial part of the study, the investigator has realized a need to do a preliminary study to determine the correct dose of holothuria extract and 18 rats were used in the first part of the study. The objectives have to be changed:	The modified objectives are achieved. The original objectives are not achieved because of financial and time constraint. The money requested to pay for research assistant was not approved
2. To investigate the effects of gamat on c-fos expression when given prior to the inflammation.	1) To investigate the effects of different doses of holothuria extract on pain behaviour in formalin pain model 2) To determine the analgesic dose of holothuria extract that suppresses the pain behaviour in formalin pain model 3) To investigate the effects of holothuria extract on c-fos expression in formalin pain model	
3. To investigate the effects of gamat on c-fos expression when given after the inflammation is established.	The analgesic effect of holothuria extract is dose dependent. 4 mg/kg of holothuria extracts has significantly suppressed the pain behaviour and c-fos expression in the thalamus in formalin injected rats.	Achieved
4.		

- Laporan Akhir perlu disertakan salinan manuskrip dan surat yang dihantar kepada mana-mana jurnal untuk penerbitan.

Nama Penyelidik Utama (PI): Dr Che Badariah Ab Aziz

t.t.: 26/4/2010

Tarikh:



CheBadariah

From: Ken Craig [kcraig@psych.ubc.ca]
Sent: Friday, April 23, 2010 3:19 AM
To: CheBadariah
Subject: Re: FW: Submission of an article

Dear Dr. Aziz:

It has just come to my attention that you were not sent an acknowledgment of receipt of this manuscript in the editorial office. I am pleased to confirm that it did arrive and it has been sent out for peer review.

Sincerely,
Ken Craig

Kenneth D. Craig, PhD
Editor-in-Chief
Pain Research & Management

CheBadariah wrote:

>
> Dear Prof,
>
> I hope you have received the email that I have sent last Thursday,
> 11/03/10.
>
> Please reply if you have received them.
>
>
> Thank you.
>
>
> Best regards,
>
> Dr Che Badariah Ab Aziz
>
> Department of Physiology
>
> School of Medical Sciences
>
> Universiti Sains Malaysia Health Campus
>
> 16150 Kubang Kerian
>
> Kelantan
>
> Malaysia

> -----
> --
>
> *From:* CheBadariah [mailto:badariah@kb.usm.my]
> *Sent:* Thursday, March 11, 2010 11:55 AM
> *To:* 'kcraig@psych.ubc.ca'
> *Subject:* Submission of an article
>
>
>
> Dear Prof,

>
> I have attached a cover letter, the text of the article
>
> (*The effects of intraperitoneal administration of holothuria extracts
> on pain behaviour in an acute pain model)*
>
> and the figures.
>
>
>
> I really hope that the article can be reviewed and considered to be
> published in Pain research and management.
>
>
>
>
> Thank you.
>
>
>
> Best regards,
>
> DR Che Badariah Ab Aziz
>
> Department of Physiology
>
> School of Medical Sciences
>
> Universiti Sains Malaysia Health Campus
>
> 16150 Kubang Kerian
>
> Kelantan
>
> Malaysia
>

The effects of intraperitoneal administration of holothuria extracts on pain behaviour in an acute pain model

Che Badariah Ab Aziz^{1§}, Mohd Fadzli Wagiman^{2*}, Shamsul Kamalrujan Hasan^{3*}

¹ MBBS, MSc, PhD

Department of Physiology, School of Medical Sciences, USM Health Campus, 16150

Kubang Kerian Kelantan (The work was done at this address)

² MBBS

Department of Anaesthesiology, School of Medical Sciences, USM Health Campus, 16150

Kubang Kerian Kelantan

³ MBBS, MMed

Department of Anaesthesiology, School of Medical Sciences, USM Health Campus, 16150

Kubang Kerian Kelantan

[§]Corresponding author

Email addresses:

CBA: badariah@kb.usm.my

MFW: fadzlimhd@yahoo.com

SKH: shamsul@kb.usm.my

Abstract

The aims of this study were to determine the analgesic dose of holothuria extracts and compare the extract effects with dynastat, cyclooxygenase-2 inhibitor, on pain behaviour in rats injected with formalin. In the first part of the study, eighteen Sprague-Dawley male rats (220-300 gram) were allocated into three different groups; saline, holothuria 2 mg/kg, and holothuria 4mg/kg. In the second part of the investigation, twenty one Sprague-Dawley male rats (220-300 gram) were given either holothuria (4 mg/kg), saline or dynastat (20mg/kg). The treatment was administered intraperitoneally immediately after intraplantar injection of 0.05 ml formalin (1%). The rats' behaviour was recorded and behaviour data were analysed using repeated measures analysis of variance (ANOVA) with post hoc Scheffe's test and significance level was taken as 0.05. The study has demonstrated that the biphasic response of the formalin test was markedly attenuated in the holothuria 4mg/kg group, signifying inhibited pain behaviour. There was no significant difference between the group receiving dynastat and saline from 5 to 50 minutes post formalin injection. At 55 and 60 minutes post formalin, the pain behaviour was significantly reduced for both of the groups receiving holothuria ($P < 0.01$) and dynastat ($P < 0.05$) when compared to the saline group. Intraperitoneal administration of 4mg/kg of holothuria extracts has significantly suppressed the pain behaviour in formalin injected rats compared to dynastat, a cyclooxygenase-2 inhibitor, in both phase 1 and 2 of formalin test. Results from this investigation throw some light as to the possible use of gamat extract as an analgesic.

Keywords: Holothuria, cyclooxygenase-2 inhibitor, pain, formalin test