

**UNIVERSITI SAINS MALAYSIA
GERAN PENYELIDIKAN UNIVERSITI
PENYELIDIKAN
LAPORAN AKHIR**

**UNDERSTANDING THE MECHANISM OF ACTIONS OF 1A
CALCIDOL ON ARTERIAL STIFFNESS, MICROVASCULAR
ENDOTHELIAL FUNCTION, INFLAMMATION AND
PROTEINURIA IN TYPE 2 DIABETIC PATIENTS WITH
NEPHROPATHY**

PENYELIDIK

PROFESOR DR. AIDA HANUM GHULAM RASOOL

PENYELIDIK BERSAMA

**PROF. MADYA KAMALIAH MOHD DAUD
SEETHA MUNISAMY
DR. SUHAIDARWANI**

2014

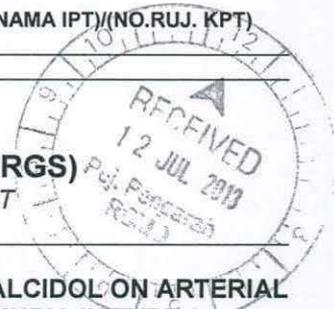
BORANG FRGS – P3(R)

Kod Projek : FRGS/FASA1-2009/(BIDANG)/(NAMA IPT)/(NO.RUJ. KPT)



**FINAL REPORT
FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS)**

Laporan Akhir Skim Geran Penyelidikan Asas (FRGS) IPT
Pindaan 1/2009



A RESEARCH TITLE : UNDERSTANDING THE MECHANISM OF ACTIONS OF I ALPHA CALCIDIOL ON ARTERIAL STIFFNESS, MICROVASCULAR ENDOTHELIAL FUNCTION, INFLAMMATION AND PROTEINURIA IN TYPE 2 DIABETIC PATIENTS WITH NEPHROPATHY

PROJECT LEADER : Professor Dr Aida Hanum Ghulam Rasool

PROJECT MEMBERS (including GRA) :
 1. Assoc. Prof. Madya Kamaliah Mohd Daud
 2. Seetha Munisamy (MSc.student)
 3. Dr Suhaidarwani (Masters in Medicine candidate, now specialist in MOH)

PROJECT ACHIEVEMENT (Prestasi Projek)

B ACHIEVEMENT PERCENTAGE			
Project progress according to milestones achieved up to this period	0 - 50%	51 - 75%	76 - 100%
Percentage			/

RESEARCH FINDINGS

Number of articles/ manuscripts/ books	Indexed Journal	Non-Indexed Journal
	1 article in press (attached) ISI listed, impact factor=2.657 Another manuscript of final results to be submitted	
Paper presentations (attached)	International	National
	1	2
Others (Please specify)	International Award: Young investigator fellowship of the Asian Pacific Society of Hypertension, 24 th Scientific Meeting of the International Society of Hypertension, Sydney, Australia 2012 (attached)	

HUMAN CAPITAL DEVELOPMENT

Human Capital	Number		Others (Please specify):
	On-going	Graduated	
PhD Student			
Masters Student	1 (process of submission)	1 (Masters in Medicine)	
Undergraduate Students			
Temporary Research Officer			

Temporary Research Assistant	
Total	

B

C	Budget Approved (Peruntukan diluluskan) : RM81,500
	Amount Spent (Jumlah Perbelanjaan) : <u>RM81,493 (attached)</u>
	Balance (Baki) : RM7.04
	Percentage of Amount Spent : nearly 100%

D

International

Activity	Date (Month, Year)	Organizer
(e.g : Course/ Seminar/ Symposium/ Conference/ Workshop/ Site Visit)		

National

Activity	Date (Month, Year)	Organizer
(e.g : Course/ Seminar/ Symposium/ Conference/ Workshop/ Site Visit)		

E

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F

Nil, objectives achieved

G

Understanding the mechanism of actions of 1 alpha calcidol on arterial stiffness, microvascular endothelial function, inflammation and proteinuria in type 2 diabetic patients with nephropathyAida Hanum Ghulam Rasool, Kamaliah M Daud, Seetha Munisamy, Suhaidarwani Hamid
Pharmacology Vascular Laboratory, School of Medical Sciences, Universiti Sains Malaysia

Introduction: Low vitamin D levels correlate with presence of cardiovascular diseases (CVD) in diabetics. Mechanism for the beneficial effects of vitamin D on CVD has not been fully explained. This study aimed to evaluate possible mechanisms for vitamin D effects on markers linked to CVD progression. The effects of vitamin D (as 1-alfacalcidol) in diabetic nephropathy patients on i) arterial stiffness ii) microvascular endothelial function iii) inflammation iv) proteinuria were evaluated.

Methodology: A prospective randomized controlled study was conducted in diabetic nephropathy patients. Vitamin D treated group (n=28) were given 1 α calcidol 0.25 mcg daily for 6 months, while control patients (n=32) received standard treatment. Baseline measurements for vitamin D levels, hsCRP, arterial stiffness, blood pressure (BP), microvascular endothelial function, renal function and albuminuria were performed and repeated after 6 months.

Results and conclusion: After 6 months treatment with vitamin D, there was significant improvement in arterial stiffness in vitamin D deficient patients. Significant reductions in central SBP, central pulse pressure and peripheral SBP were also observed. Microvascular endothelial function was impaired in vitamin D deficient diabetic nephropathy patients, however, 6 months treatment with 0.25 mcg alfacalcidol did not improve this parameter. Systemic inflammation increased after 6 months in controls patients but was not seen in vitamin D treated patients. It appears that the effects of vitamin D on CV markers were more apparent in vitamin D deficient diabetic nephropathy patients. Thus, vitamin D may be beneficial for CVD via its effect of improving BP, arterial stiffness, microvascular function and delaying progression of inflammation in diabetic nephropathy patients.

Date : 07th. July 2013

Project Leader's Signature:

Profesor Aida Hanum Ghulam Rasool
Prof. Madya Kamaliah Daud
Alfa calcidol & vascular effects
in diabetic nephropathy
FRGS : 203/PPSP/6171126