

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

**HEALTH AND SAFETY: THE USE OF PCT-BASED TECHNIQUES TO
DETERMINE MOLECULAR CHARACTERISTIC CHANGES IN THE
ENTERIC PATHOGENS FOR EFFECTIVE POST-FLOOD
INFECTION CONTROL STRATEGIES**

PENYELIDIK

PROFESOR MADYA DR. AZIAN BT. HARUN

PENYELIDIK BERSAMA

**PROFESOR DR. HABSAH HASAN
PROR. MADYA DR. KIRNPAL KAUR BANGA SINGH
PROR. MADYA DR. ZAIDAH ABD. RAHMAN**

2017



KEMENTERIAN
PENDIDIKAN
MALAYSIA

FINAL REPORT
GERAN PENYELIDIKAN PENGURUSAN BENCANA BANJIR
Laporan Akhir Skim Geran Penyelidikan Fundamental (FRGS)
Tahun 2015

A RESEARCH TITLE:

The use of PCR-based techniques to determine molecular characteristics changes in the enteric pathogens for effective post-flood infection control strategies

YEAR: 2015

THEME CODE: 1.0
(Please refer attachment)

SUBTHEME CODE: 1.7

Please Tick (✓)

PHASE: 01: Pre-Disaster 02: During Disaster 03: Post-Disaster

AREA: 01: Preventive 02: Preparedness 03: Rescue and Recovery
04: Adaptation 05: Mitigation

START DATE: 1 April 2015

END DATE: 31 December 2015 (Extended to 31 March 2016)

PROJECT LEADER: Assoc. Prof. Dr Azian Harun

I/C / PASSPORT NUMBER: 691123-03-5058

PROJECT MEMBERS: 1. Professor Dr Habsah Hasan
(including GRA/RA/RO) 2. Assoc. Prof. Dr Kirnpal Kaur Banga Singh
3. Assoc. Prof. Dr Zaidah Abd. Rahman

**PROJECT ACHIEVEMENT (Prestasi Projek)****B****ACHIEVEMENT PERCENTAGE**

Project progress according to milestones achieved up to this period	0 - 50%	51 - 75%	76 - 100%
Percentage (please state #%)			100%

RESEARCH OUTPUT

Number of articles/ manuscripts/ books (Please attach the First Page of Publication)	Indexed Journal	Non-Indexed Journal
	2 (manuscript in writing)	
Conference Proceeding (Please attach the First Page of Publication)	International	National
		1
Intellectual Property (Please specify)		
Number and title of Policy Paper / SOP / Technology Solution (Please specify)	1. Book - 1 2. Education material – 2 (to be used/distributed in activity #5 section D)	

HUMAN CAPITAL DEVELOPMENT					
Human Capital	Number				Others (please specify)
	On-going		Graduated		
Citizen	Malaysian	Non Malaysian	Malaysian	Non Malaysian	RA/Enumerators: 2 Ms Goay Yuan Xin Ms Yasmin Khairani Ismadi
No. PhD STUDENT					
Student Fullname: IC / Passport No: Student ID:					
No. MASTER STUDENT					
Student Fullname: IC / Passport No: Student ID:					
No. RA/RO					
Student Fullname: IC / Passport No: Student ID:					
Total					

EXPENDITURE (Perbelanjaan) as Borang K1(RMC)

C Budget Approved (Peruntukan diluluskan) : RM 70 500.00
Amount Spent (Jumlah Perbelanjaan) : RM 67 017.26
Balance (Baki) : RM 3 482.74
Percentage of Amount Spent : 95.06 %
(Peratusan Belanja)

ADDITIONAL RESEARCH ACTIVITIES THAT CONTRIBUTE TOWARDS DEVELOPING SOFT AND HARD SKILLS
(Aktiviti Penyelidikan Sampingan yang menyumbang kepada pembangunan kemahiran insaniah)

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)		
1. Bengkel Banjir 1 – Everly Hotel Putrajaya	14-15 September 2015	Universiti Teknologi Malaysia/KPT
2. 20th NCMHS – Health Campus USM	12-14 September 2015	PPSP, Universiti Sains Malaysia

3. Persidangan Kajian Bencana Banjir 2014 – Pullman Putrajaya Lakeside Hotel	4-6 April 2016	Universiti Teknologi Malaysia/KPT
4. 6th National Conference on Infectious Diseases – Health Campus USM	22-23 August 2016	Department of Medical Microbiology & Parasitology, PPSP, USM
5. Program Memasyarakatkan Hasil Kajian Banjir 2014 – Jajahan Kuala Krai	22 October 2016	PPSP, Universiti Sains Malaysia

E PROBLEMS / CONSTRAINTS IF ANY (Masalah/ Kekangan sekiranya ada)

F RECOMMENDATION (Cadangan Penambahbaikan)

G RESEARCH ABSTRACT – Not More Than 200 Words (Absirak Penyelidikan – Tidak Melebihi 200 patah perkataan)

Given the magnitude of the 2014 flood in Kelantan, a great deal of changes are expected namely in the rates and severity of microbial contamination, microbiological profiles of the water sources, and consequently the incidence of infectious diseases associated with contaminated food and water. Immediate humanitarian aids to the flood victims have been widely supplied including shelter, food, clothing and medications including oral antibiotics. There was a huge possibility of inappropriate prescription and overexposure of pathogens to antimicrobials, leading to resistance. This study describes the types, proportion, antimicrobial susceptibility profiles and the genetic relatedness of enteric pathogens isolated immediately before and after massive flood in December 2014. Enteric pathogens isolated from stool samples of patients attending Hospital Universiti Sains Malaysia after the flood (January 2015 through June 2015) were collected and compared to pre-flood data. Bacterial identification was performed according to standard method. Serotyping and PCR-based methods were used for specific identification of *Salmonella* species. Antimicrobial susceptibility testing was performed using disc diffusion method in accordance to CLSI standards. PCR was used for screening of antimicrobial resistance genes and multilocus sequence typing (MLST) was performed to determine the genetic relatedness among *Salmonella* species isolated before and after flood. There was an increment in the isolation of enteric pathogens after flood. *Salmonella* species were the most frequently isolated enteric pathogens after flood. There was an increment in the isolation of *Campylobacter jejuni* and *Aeromonas hydrophila*. There was higher percentage of resistance to commonly prescribed oral antibiotics such as ciprofloxacin, cefuroxime and erythromycin in post-flood enteric pathogens. Policies need to be delineated to ensure appropriate antimicrobial prescription and usage during future flood response.

Date : 9 June 2016
Tarikh

Project Leader's Signature
Tandatangan Ketua Projek

