

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

**STUDY ON RED BLOOD CELL ALLOANTIBODIES
DETECTION IN MALAY WOMEN DURING
PREGNANCY**

PENYELIDIK

PROFESOR MADYA SHAH REZA JOHAN NOOR

PENYELIDIK BERSAMA

**PROF. MADYA DR. RAPIAAH MUSTAFFA
DR. MOHD NAZRI HASSAN
PROFESSOR DR. HANS VAN ROSTERNBERGHE**

2013

1. Nama Ketua Penyelidik: ASSOC PROF DR SHAH REZA JOHAN NOOR

Name of Research Leader

Profesor Madya/
Assoc. Prof.

Dr./
Dr.

Encik/Puan/Cik
Mr/Mrs/Ms

2. Pusat Tanggungjawab (PTJ): SCHOOL OF MEDICAL SCIENCES

School/Department

3. Nama Penyelidik Bersama: 1. ASSOC PROF DR RAPIAAH MUSTAFFA

2. DR MOHD NAZRI HASSAN

3. PROF DR HANS VAN ROSTERNBERGHE

4. Tajuk Projek:

RED BLOOD CELL ALLOANTIBODIES DETECTION IN MALAY PREGNANT
WOMEN AND HAEMOLYTIC DISEASE OF FETUS AND NEWBORN

Title of Project

5. Ringkasan Penilaian/Summary of Assessment:

Tidak
Mencukupi
Inadequate

Boleh
Diterima
Acceptable

Sangat Baik
Very Good

1 2

3

4 5

i) Pencapaian objektif projek:
Achievement of project objectives

ii) Kualiti output:
Quality of outputs

iii) Kualiti impak:
Quality of impacts

iv) Pemindahan teknologi/potensi pengkomersialan:
Technology transfer/commercialization potential

v) Kualiti dan usahasama :
Quality and intensity of collaboration

vi) Penilaian kepentingan secara keseluruhan:
Overall assessment of benefits

6. **Abstrak Penyelidikan**

(Perlu disediakan di antara 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 of 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/s to the University and the community at large)

REFER ATTACHMENT

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

Allo- antibodi sel darah merah
Antigen sel darah merah

Hemolisis fetus dan bayi baru lahir

Bahasa Inggeris

RBC alloantibodies
RBC antigens

Haemolytic disease of fetus and newborn

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 diterbit/diserahkan)

(State type, title, author/editor, publication year and where it has been published/submitted)

1. Poster Presentation: Preliminary report on RBC alloantibodies detection among Malay women during pregnancy in HUSM (Refer attachment)
2. Poster Presentation: The significance of irregular red cell alloantibodies during pregnancy and infant outcome. (Refer attachment)
3. Poster Presentation: Evaluation of the risk factors for development of RBC alloantibodies in Malay pregnant women. (refer attachment)
4. Manuscript: Red Blood Cell Alloantibodies Detection in Malay Pregnant Women: A Tertiary Hospital Experience. Accepted for publication by International Medical Journal on April 3rd, 2013.
5. _____

- (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 source and society.

* Sila berikan salinan/Kindly provide copies

- (c) **Latihan Sumber Manusia**
Training in Human Resources

- i) Pelajar Sarjana: _____
Graduates Students
(Perincikan nama, ijazah dan status)
(Provide names, degrees and status)
Dr Mohd Nazri Hassan
Master in Pathology (Haematology),
Graduated, May 2011
- ii) Lain-lain: _____
Others
-
-

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

NIL



Tandatangan Penyelidik
Signature of Researcher

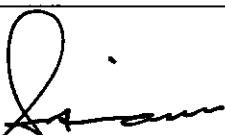


Tarikh
Date

Boleh dibenarkan

Tutup Ceramah

Dina
19/2/13


PROFESOR (DR) NIK SORIANI YAACOB
Chairman Of Research committee
School Of Medical Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian, Kelantan.

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

19/2/13
Tarikh
Date

BORANG LAPORAN HASIL PENYELIDIKAN

PPSP

Tajuk geran: RED BLOOD CELL ALLOANTIBODIES DETECTION IN MALAY PREGNANT WOMEN AND HAEMOLYTIC DISEASE OF FETUS AND NEWBORN

Penyelidik: 1. ASSOC PROF DR SHAH REZA JOHAN NOOR
2. PROF DR HANS VAN ROSTERNEBERGHE
3. ASSOC PROF DR RAPIAAH MUSTAFFA
4. DR MOHD NAZRI HASSAN

Jenis geran: SHORT TERM GRANT

Tempoh geran: 1 Jun 2008 – 31 Mei 2010

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 prevalence of RBC antibodies in Malay pregnant women in HUSM	Fifty one (0.99%) out of 5163 pregnant women were found to have irregular RBC alloantibodies and when the specificities were further characterized, 30 (0.58%) women were found to possess clinically significant alloantibody.	Achieved
2. To correlate the RBC alloantibodies with the severity of Haemolytic disease of newborn	Fourteen (0.27%) infants were clinically considered to develop HDFN. Anti-D, anti-c and anti-K were identified to cause moderate to severe HDFN.	Achieved
3.		
4.		

Dr.Rapiaah Mustaffa,MD(UKM)MMed Path

From: "Dr. Mohd Nazri Hassan" <nazrihas@kk.usm.my>
To: "rapiaah" <rapiaah@kb.usm.my>
Sent: Tuesday, June 25, 2013 8:38 AM
Subject: Fwd: paper acceptance (IMJ)

----- Forwarded Message -----

From: "Blue Sand" <imi-uc@seronijhou.co.jp>
To: "Dr. Mohd Nazri Hassan" <nazrihas@kk.usm.my>
Sent: Wednesday, April 3, 2013 12:59:06 PM GMT +08:00 Beijing / Chongqing / Hong Kong / Urumqi
Subject: paper acceptance (IMJ)

International Medical Journal □ IMJ □

IMJ Division

2 - 11 - 32, Mishuku, Setagaya-ku

Tokyo 154-0005, Japan

e-mail: imi-uc@seronijhou.co.jp

April 3rd, 2013

Dr. Mohd Bazri Hassan
Department of Haematology
School of Medical Sciences, Health Campus
University Sains Malaysia

Dear Dr. Hassan :

LETTER OF PAPER ACCEPTANCE

RE: your paper
Red Blood Cell Alloimmunization among Malay Pregnant Women: A Tertiary Hospital Experience
(paper number: GS-620306)

6/25/2013

We hereby certify that your above paper has been accepted for publication in the IMJ as OBSTETRICS & GYNECOLOGY by an editor-in-chief based on peer referee's examination report. It will appear in the near future.

If any, please include related one or two papers previously published in the IMJ (International Medical Journal) in the references, as good and relevant papers are often found in the IMJ. IMJ papers are found on the EBSCO, SCOPUS, and other databases.

Please send us its soft copy through e-mail for our editorial work.

If any, please include related one or two papers previously published in the IMJ (International Medical Journal) in the references, as good and relevant papers are often found in the IMJ. IMJ papers are found on the EBSCO, SCOPUS, and other databases.

Please send us its soft copy through e-mail for our editorial work.

Yours faithfully,

IMJ division
Wataru Uchida
Editorial Office

6/25/2013

ABSTRACT

RED BLOOD CELL ALLOANTIBODIES DETECTION IN MALAY PREGNANT WOMEN AND HAEMOLYTIC DISEASE OF FETUS AND NEWBORN

Pregnancy is known to cause red blood cell (RBC) alloimmunisation which may lead to the production of harmful alloantibodies and subsequently potentially to cause haemolytic disease of fetal and newborn (HDFN). However, RBC alloantibodies are significantly different between different populations and ethnics. Aim of this study is to determine the prevalence of RBC alloantibody among Malay pregnant women and its association with HDFN.

Clinical and serological data of 5163 Malay pregnant women who attended labour room, Hospital Universiti Sains Malaysia were collected and analyzed prospectively. The blood samples were subjected to standard blood bank procedure for antibody screening and identification. The infant of women with positive antibody screening was monitored for evidence of HDFN.

Fifty one (0.99%) pregnant women were found to have irregular RBC alloantibodies and when the specificities were further characterized, 30 (0.58%) women were found to possess clinically significant alloantibody. Most of the clinically significant alloantibodies belonged to Rhesus (Rh) system (55.8%) where anti-E (33.3%) was the most common antibody identified, followed by anti-D (10.0%). Fourteen (0.27%) infants were clinically

considered to develop HDFN. Anti-D, anti-c and anti-K were identified to cause moderate to severe HDFN.

In conclusion, prevalence of RBC alloantibody in Malay pregnant women is low (<1%), which is similar to other published studies. There were differences in the distribution of alloantibody specificity, however the antibodies toward Rh antigen are still the commonest clinically significant alloantibody identified. Considering the low prevalence of clinically significant alloantibodies and HDFN, the value of current routine antenatal RBC antibody screening practice in most Western countries becomes questionable and may not be directly applicable to Malaysian community without modification. The antibody screen should be restricted to women who are RhD negative, or who have a history of HDFN especially due to anti-c and anti-K.

ABSTRAK

PENGESANAN ALLOANTIBODI TERHADAP SEL DARAH MERAH DI KALANGAN PEREMPUAN MELAYU MENGANDUNG DAN PENYAKIT HEMOLISIS FETUS DAN BAYI BARU LAHIR

Mengandung merupakan salah satu penyebab alloimunisasi sel darah merah di mana boleh menjurus kepada pembentukan alloantibodi dan seterusnya berpotensi untuk menyebabkan penyakit hemolisis fetus dan bayi baru lahir. Walaubagaimanapun, alloantibodi terhadap sel darah merah adalah berlainan mengikut populasi dan kaum. Tujuan kajian ini adalah untuk mengenalpasti prevalens alloantibodi terhadap sel darah merah di kalangan wanita Melayu mengandung dan hubungannya dengan penyakit hemolisis fetus dan bayi baru lahir.

Data klinikal dan serologi daripada 5163 orang perempuan Melayu mengandung yang datang ke dewan bersalin, Hospital Universiti Sains Malaysia dikumpul dan dianalisa secara prospektif. Sampel darah dianalisa mengikut prosedur tabung darah yang standard untuk ujian saringan dan penentuan antibodi. Bayi kepada wanita yang mempunyai positif saringan antibodi diawasi untuk penyakit hemolisis fetus dan bayi baru lahir.

Lima puluh satu (0.99%) orang perempuan mengandung didapati mempunyai alloantibodi terhadap sel darah merah dan apabila spesifisiti mereka dikenalpasti dengan lebih lanjut, 30 (0.58%) orang didapati mempunyai alloantibodi yang signifikan secara klinikal.

Kebanyakan daripada alloantibodi yang signifikan secara klinikal adalah dari sistem Rhesus (55.8%) di mana anti-E (33.3%) merupakan antibodi yang paling kerap dikenalpasti, diikuti oleh anti-D (10.0%). Empat belas (0.27%) orang bayi didapati mempunyai penyakit hemolisis fetus dan bayi baru lahir secara klinikal. Anti-D, anti-c dan anti-K dikenalpasti menyebabkan penyakit hemolisis fetus dan bayi baru lahir yang sederhana dan teruk.

Kesimpulannya, prevalens alloantibodi terhadap sel darah merah di kalangan perempuan Melayu mengandungi adalah rendah (<1%), seperti yang dilaporkan oleh kajian-kajian lain. Walaupun terdapat kelainan pada taburan spesifisiti antibodi, antibodi kepada antigen Rh adalah yang paling kerap dikenalpasti. Memandangkan rendahnya prevalens alloantibodi yang signifikan secara klinikal dan penyakit hemolisis fetus dan bayi baru lahir, nilai saringan antibodi terhadap sel darah merah semasa mengandung yang diamalkan di kebanyakan negara barat dikhuatiri dan kemungkinan tidak boleh dipakai di Malaysia sekiranya tidak diubahsuai. Saringan antibodi sepatutnya terhad kepada wanita yang RhD negatif, atau mempunyai sejarah penyakit hemolisis fetus dan bayi baru lahir terutamanya disebabkan oleh anti-c dan anti-K.