

**DETECTION OF COMMON MNS VARIANTS BY USING
PCR-SSP TECHNIQUE**

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**To Allah,
For his love and Generosity to me.**

**To my family,
Who made this possible
with their patience and understanding.**

**To my lecturers and friends
in University of Malaya,
Who keep me going
towards my goals.**

ABSTRACT

The Miltenberger (Mi) is a group of phenotypes in a highly polymorphic blood group system (MNS) which is clinically significant. The generation of variant phenotypes of Mi is based on the gene rearrangement between glycoprotein A (*GYPA*) and glycoprotein B (*GYPB*) such as unequal crossing over or gene conversion.

The aim of this study was to detect MNS variants in a multi-ethnic Malaysian population comprising Malays, Chinese and Indians.

Polymerase chain reaction-sequence specific primer (PCR-SSP) was performed on 77 archived genomic DNA samples to detect glycoprotein (*GYP*) hybrid genes (*GYP B-A-B*) of common Mi Antigens using specifically designed primers.

Out of the total of 77 samples which were included in the study, the *GYP* hybrid gene was detected in thirty-nine samples as follows: 15 (44.1%) out of 34 samples in Malays, 24 (70.6%) out of 34 in Chinese. In any of the 6 of Indian ethnic group samples, no specific *GYP* hybrid gene detected.

GYP hybrid gene was identified with a higher prevalence among Chinese compared with Malays, while it was none detected in Indians. *GYPB* hybrid genes were detected previously in Chinese populations and none in the Malays.

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LIST OF SYMBOLS AND ABBREVIATIONS

bp	base pair
cDNA	complementary deoxyribonucleic acid
DNA	deoxyribonucleic acid
EDTA	ethylenediamine tetraacetic acid
Fig.	Figure
ISBT	International Society of Blood Transfusion
g	gram
GP	Glycophorin
GPA	Glycophorin A
GPB	Glycophorin B
<i>GYP</i>	Glycophorin gene
<i>GYP A</i>	Glycophorin A gene
<i>GYP B</i>	Glycophorin B gene
<i>GYP E</i>	Glycophorin E gene
HDN	hemolytic disease of new born
HGH	human growth hormone
HTR	haemolytic transfusion reaction
mAb	monoclonal antibody
Mi	Miltenberger
min	minute
mg	miligram
μl	microliter

ml	millilitre
ng	nanogram
nt	nucleotides
NTC	non template control
PCR	polymerase chain reaction
PCR-SSP	polymerase chain reaction-sequence specific primer
RBCs	red blood cells
RNase	ribonuclease
rpm	revolutions per minute
RT	room temperature
TBE	Tris-borate-EDTA
TMU	Transfusion Medicine Unit
UMMC	University Malaya Medical Center
%	percent
°C	degree Celsius
sec	second
V	Volt