

Title (Time New Roman 14, Bold)

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An abstract of no more than 250 words includes a structured abstract. Structured abstracts should state the Introduction/Background, Objective(s) of the study or investigation, basic Methods, Results, and Conclusions.

Keywords: 3-5 keywords (Time New Roman 12)

Kidd Blood Group Genotyping: Development and Application

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We developed an allele-specific polymerase chain reaction (AS-PCR) technique for Kidd blood group (JK) genotyping and presented Kidd blood group allele frequencies in Thais and compared them with other populations previously reported. Firstly, 340 samples from unrelated central Thai donors were tested with anti-Jk^a and anti-Jk^b and the direct urea lysis test was used for screening Jk(a-b-) phenotype. For AS-PCR technique, different types of primers were used for *JK*01* and *JK*02* allele detections in known DNA controls. Regarding *JK*02* allele detection, one type of two mismatch pairing at the 3' end of the forward primer can be used together with the newly designed reverse primer for JK genotyping. The typing results in all samples obtained by serological techniques and newly developed AS-PCR technique were in agreement and also gave 100% concordance of results in 30 samples randomly tested twice. Secondly, 160 samples and 300 samples from central and northern Thai donors were genotyped. We found that *JK*01* and *JK*02* allele frequencies were 0.503 and 0.497 in central Thais, while the frequencies were 0.498 and 0.502 in northern Thais. The *JK*01* and *JK*02* allele frequencies in Thais were similar to those in Chinese, whereas they significantly differed from Japanese, French Basques, and African-Americans. In conclusion, the in-house AS-PCR is simple, cost-effective, and convenient for Kidd blood group genotyping, especially in resolving serologic investigations. Importantly, this is the first report of Kidd blood group allele frequencies in Thais, which is beneficial for the prevention of both alloimmunization and adverse transfusion reactions.

Keywords: Allele-specific PCR; AS-PCR; Kidd blood group; genotyping; Thais

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