



# Isolation and analysis of cell-free fetal DNA from maternal peripheral blood in Chinese women

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**ABSTRACT.** Non-invasive prenatal diagnosis is used to detect the genetic material of the fetus by isolating the cell-free fetal DNA (cffDNA) from maternal peripheral blood. In order to establish an isolation method for

cffDNA from maternal peripheral blood in Chinese women, the cffDNA was acquired with a two-step centrifugation using a QIAamp DNA Blood mini kit. The SRY gene of plasma DNA was amplified by polymerase chain reaction (PCR). Real-time quantitative PCR was used to measure the concentration of cffDNA in maternal peripheral blood in different pregnant women. The results of the SRY gene amplification of plasma DNA from pregnant women was the same as that of the amniocyte DNA. The average concentration of cffDNA in maternal peripheral blood of pregnant women in different gestational stages was 0.98 ng/mL (0.26-1.49 ng/mL), 1.43 ng/mL (0.46-2.34 ng/mL), and 1.95 ng/mL (0.65-6.81 ng/mL) from early, middle, and late gestational stages, respectively. The mean of cffDNA from total DNA in plasma in different stages of gestation was 22.28% (9.86-27.81%). The lowest concentration of DNA amplified by nested-PCR in our research was  $10^{-4}$ - $10^{-3}$  ng/ $\mu$ L. The isolation method for cffDNA from maternal peripheral blood was successfully established and further research into its applications will be conducted.

**Key words:** Cell-free fetal DNA; Isolation method; Plasma; SRY gene; Non-invasive prenatal diagnosis