An improved protocol for high quantity and quality of genomic DNA isolation from human peripheral blood

ABSTRACT

DNA isolation is the most essential step in molecular studies. The quantity and quality of the isolated DNA may subsequently influence the reliability and reproducibility of experimental data especially those involving downstream analysis such as polymerase chain reaction (PCR). In this study, we report an improved protocol for isolating high quantity and quality of genomic DNA from human peripheral blood that is as competitive to commercial kits. The concentration of the genomic DNA isolated using the improved protocol was >100 ng/µl and the A_{260}/A_{280} absorbance ratio was ranged within 1.604-1.861. When the DNA integrity was measured using Fragment Analyzer™, the isolated genomic DNA was highly intact with a genomic quality number of ≥7.0. The isolated genomic DNA was adequate for further molecular analyses including standard PCR and real-time PCR. More importantly, the improved protocol is able to isolate the genomic DNA of *Plasmodium* parasites that infected human red blood cells, thus enabling them to be correctly identified up to the species level using multiplex PCR.