High integrity total RNA isolation from human peripheral blood that is as competitive to commercialize kits

Abstract

A substantial problem when isolating total RNA from human whole blood is the susceptibility to degradation and inconsistent yield of RNA especially when isolation is performed from clinical samples. Here, we report an improved method for isolating high integrity of total RNA from human peripheral blood using guanidium thiocyanate-phenol-chloroform. We found that this cost effective method was able to consistently produced high yield and high integrity of total RNA with average RNA concentration > 2000 ng/mL of blood and RNA integrity number (RIN) > 8.0, as well as negligible genomic DNA contamination from human whole blood that was comparable to other commercial blood total RNA isolation kits. In addition, the present method is also suitable for blood sample that required up to 24 hr transportation time prior total RNA extraction, and able to obtain consistent result in real-time polymerase chain reaction (qPCR) downstream application.