Rapid molecular diagnosis of the Gilbert’s syndrome-associated exon 1 mutation within the UGT1A1 gene

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ABSTRACT. Gilbert’s syndrome is suspected in patients with unconjugated hyperbilirubinemia caused by decreased activity of the UDP-glucuronosyltransferase 1A1 (UGT1A1) gene in the absence of abnormal liver function and hemolysis. The major genetic variants underlying Gilbert’s syndrome are TATA-box repeats of the promoter region and exon 1 G211A of the coding region, particularly in Asians. The efficacy of DNA melting curve analysis, however, has not been established for the G211A mutation. For rapid and accurate molecular diagnosis of Gilbert’s syndrome, DNA melting curve analysis was evaluated for its genotyping capability not only for TATA-box
repeats of the *UGT1A1* promoter, but also for G211A of *UGT1A1* exon 1. TA repeats within the TATA-box sequence and the exon 1 G211A mutation of the *UGT1A1* gene were analyzed by DNA melting curve analysis. To evaluate the assay reliability, direct sequencing or polyacrylamide gel electrophoresis was used as a comparative method. All homozygous and heterozygous polymorphisms of A(TA),TTA within the TATA-box allele and of exon 1 G211A mutants of the *UGT1A1* gene were successfully identified with DNA melting curve analysis. DNA melting curve analysis is, therefore, an effective molecular method for the rapid diagnosis of Gilbert’s syndrome, as it detects not only TATA-box polymorphisms but also the exon 1 G211A mutation located within the *UGT1A1* gene.

**Key words:** G211A mutation; *UDP-glucuronosyltransferase 1A1*; Gilbert’s syndrome;