

Development of DNA ligase-based system for accurate discrimination of C/T type SNP using modified DNA probe

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SNPs (single nucleotide polymorphisms) are one-base DNA sequence variations that are responsible for various inherited diseases. DNA ligase-based mismatch detection methods have been proposed as useful strategies for analyzing SNPs, but the methods showed unavoidable limitation in cytosine/thymine(C/T)-type SNP analyses. Here, we employed DNA oligomers containing chemically modified nucleobases at the end as new ligation fragments for DNA-ligase-based SNP analysis. The use of oxanine adjacent to guanine in the ligation junction led to successful ligation for G:C and no ligation for G:T. That is, this method provides clear discrimination of guanine:thymine (G:T) mismatch from guanine:cytosine (G:C). This ligation method using an oxanine-containing fragment will be useful for developing accurate C/T-type SNP analysis system.