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Methodology

Event-specific qualitative and quantitative PCR detection of the GMO carnation (*Dianthus caryophyllus*) variety Moonlite based upon the 5'-transgene integration sequence

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ABSTRACT. To ensure the implementation of genetically modified organism (GMO)-labeling regulations, an event-specific detection method was developed based on the junction sequence of an exogenous integrant in the transgenic carnation variety Moonlite. The 5'-transgene integration sequence was isolated by thermal asymmetric interlaced PCR. Based upon the 5'-transgene integration sequence, the event-specific primers and TaqMan probe were designed to amplify the fragments, which spanned the exogenous DNA and carnation genomic DNA. Qualitative and quantitative PCR assays were developed employing the designed primers and probe. The detection limit of the qualitative PCR assay was 0.05% for Moonlite in 100 ng total carnation genomic DNA, corresponding to about 79 copies of the carnation haploid genome; the limit of detection and quantification of the quantitative PCR assay were estimated to be 38 and 190 copies of haploid carnation genomic DNA, respectively. Carnation samples with different contents of genetically

modified components were quantified and the bias between the observed and true values of three samples were lower than the acceptance criterion (<25%) of the GMO detection method. These results indicated that these event-specific methods would be useful for the identification and quantification of the GMO carnation Moonlite.

Key words: Moonlite; GMO; Qualitative and quantitative PCR; TAIL-PCR

