ABSTRACT

The present study is concerned with quantitative detection of adulteration of non basmati in basmati using real time PCR. Genomic DNA of basmati (super) and non basmati (sharbati) was isolated and purified using Novagen kit. This purified genomic DNA was used as a template for conventional and real time PCR. A pair of specific forward and reverse primers was designed for *BAD 2* gene of non basmati rice. The specificity of the primers was confirmed by conventional PCR under optimized PCR conditions. *BAD 2* gene of non basmati rice was amplified whereas that of basmati rice remained unamplified. Each step was followed by agarose gel electrophoresis in order to quantify the particular nature of genomic DNA and *BAD 2* gene of non basmati rice. The particular nature of bands on the gel confirmed the success of the step performed. The genomic DNA was observed as a higher order DNA above the highest band of the ladder. The PCR product size was found to be 80bp by analyzing the agarose gel under UV exposure in gel documentation system. Real time PCR of different dilutions (150ng, 15ng, 1.5ng and 0.15ng) of non basmati DNA was performed under specified conditions to develop a reliable and reproducible standard curve. The slope and R^2 of a constructed standard curve was -3.55567 and 32.20691. The method was validated with non basmati rice spiked with basmati rice in different proportions (0.5%, 1%, 3%, 5%, 10% and 30%) and also with market samples. With reference to the standard curve, the amount of non basmati DNA present in the unknown validation samples was calculated by analyzing the data statistically. These calculated amounts of DNA of non basmati were used to calculate percent adulteration of non basmati in basmati samples. This real time PCR based method is very useful and economical for quantification of adulteration of basmati.