Development of multiplex-PCR for Genetically Modified Organism (GMO) detection targeting EPSPS and Cry1Ab genes in soy and maize samples

ABSTRACT

The incidence of GMO is increasing worldwide therefore development of a reliable yet cost and time saving analytical method to detect GMO is important. This study aimed to develop a multiplex-PCR for GMO detection targeting Cry1Ab and EPSPS genes in soy and maize samples simultaneously, and secondly to obtain purified nucleic acids using CTAB DNA extraction method for conducting a GM specific analysis on various types of food samples. The multiplex PCR was optimized to improve PCR performance and to minimize failure. Out of 60 samples, 42 (70.0%) were found containing Cry1Ab or EPSPS genes, consisting of 11.9% of Roundup Ready Soya positive samples and 88.1% of Bt 176 Maize positive samples. Besides, 71.7% samples yielded DNA concentration above 50 ng/µl; 66.7% samples were in the DNA purity range of 1.6 to 2.0 and 85.0% of the samples were amplifiable for the endogenous gene screening. The CTAB DNA extraction method is effective for the DNA extraction from animal feeds, raw materials and processed foods.

Keyword: Multiplex-PCR; Genetically Modified Organism (GMO); Cry1Ab; EPSPS