Development of DNA Extraction and Nested PCR Technique for Inspection of Genetically Modified Soybean in Marine Shrimp Diet

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Abstract

The genetically modified (GM) plants possibly contaminate in commercial marine shrimp diet in the future due to increasing of GM plants, especially GM soybean. Additionally, genetically modified organisms (GMOs) are prohibited in aquatic animal diets and in accordance with the principle of organic shrimp production. Thus, the contamination of GM soybean in marine shrimp diet should be inspected. The promoter, is plant virus, is generally used to inspect GM plants by PCR technique that is not a proper technique for inspection of GM plants derived food. Moreover, the false positive will be appeared if plant infected with virus. In this study, the DNA extraction method and nested PCR technique were developed to inspect GM soybean in marine shrimp diet. Results showed that the SDS method was given higher amount of DNA than CTAB method. The 35S promoter was detected from DNA of marine shrimp diet as same as 35S promoter from plasmid (positive control). That promoter sequences showed 100% homology to the promoter sequences of GM soybean (GenBank accession no. AJ308514). In conclusion, the nested PCR is accuracy and precision.

Key words: genetically modified soybean, marine shrimp diet, nested PCR, 35S promoter

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