410/D

A study on the detection of genetically modified (GM) soy food using PCR – based amplification method

S I Weeraman and T L S Tirimanne*
Department of Plant Sciences, Faculty of Science, University of Colombo

Availability of genetically modified (GM) crops and their products in the worldwide market have increased with time. GM foods have recently been subjected to debate among consumers in Sri Lanka. Due to the variability in acceptance levels among the consumers and public, appropriate labeling of GM foods has become essential. For careful monitoring detection is important. To detect GM foods, reliable and sensitive techniques are required. Two basic methods could be used for detection of genetically modified food; Polymerase Chain Reaction (PCR) – based amplification methods and protein based methods.

The aim of this research project was to detect the presence or absence of genetic modifications in samples of soybean seed, leaf and soybean derived products, available for consumption in the Sri Lankan market, using PCR–based amplification method. A soybean sample with genetically engineered herbicide resistance was used as the positive control. This is the major engineered trait found in GM soy crop worldwide. The herbicide resistance in Roundup Ready™ soybean is conferred by the incorporation of 5-enol-pyruvyl-shikimate-3-phosphate synthase (EPSPS) gene obtained from *Agrobacterium tumefacience* strain CP4 in to the soybean genome. The transgene construct consisted of CaMV 35S promoter, EPSPS coding region and a Nopaline synthase (NOS) terminator. Detection of any of these elements in the genome of the test plant can be used to prove that the test sample is GM.

Genomic DNA was extracted from soybean leaves, seeds and soybean derived products; soy meat, soy flour and soy milk powder, using a modified CTAB method with additional purification steps. The DNA extracts of the test samples were amplified with primer pairs directed against CaMV 35S promoter and NOS terminator, separately by PCR. The expected sizes of the amplified bands for CaMV promoter and NOS terminator for the positive control are 123 bp and 109 bp. The amplified products were subjected to gel electrophoresis and stained with Ethidium bromide for visualization. Bands of expected sizes were detected for the positive control, and not detected for any of the test samples. According to the results it can be concluded that the raw soybean (2), soybean leaves (1) and soy derived foods; soya meat (12), soy flour (1) and soy milk powder (1), tested from the Sri Lankan market are not genetically modified.

*shamala.tirimanne@gmail.com Tel: 011-2585038