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PCR-based diagnostics for genetically modified eggplant and potato

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Solanum melongena (eggplant) and *S. tuberosum* (potato) are the major vegetable crops, belonging to family *Solanaceae*. In India, Bt eggplant EE1 event expressing cry1Ac gene for resistance against fruit and shoot borer, developed by Maharashtra Hybrid Seeds Company Private Limited was under Biosafety Research Levels-I and II field trials during 2006-2009. GM potato expressing amaranth seed albumin (*AmA1*) gene from *Amaranthus hypochondriacus* for better protein quality and rich in sulfur containing amino acids was developed by National Institute of Plant Genome Research, New Delhi. GM detection methods facilitate segregation of GM and non-GM products for labeling purposes to check unapproved GM events and to solve legal disputes, if they arise. In the present study, multiplex PCR-based diagnostics, simultaneously targeting specific transgenes, marker genes, promoters and terminators along with taxon-specific endogenous genes have been developed for Bt eggplant event EE1 with cry1Ac gene and GM potato with *AmA1* gene. For further characterization of EE1 event, construct- and event-specific PCR assays have also been developed. Limit of detection of EE1 event and *AmA1* gene-specific PCR assays is up to 0.01%. Quantitative TaqMan[®] real-time PCR assays have been developed, targeting event-specific sequence for EE1 event of eggplant and *AmA1* gene in GM potato. Limit of quantification of developed assays is up to 0.45%. The developed diagnostics would be useful for testing the GM status of eggplant and potato for regulatory compliance and to check GM contamination since EE1 event has already been commercialized in neighboring country Bangladesh in October 2013, where the borders are porous.

Biography

Ruchi Sharma is currently working as a Senior Research Fellow at ICAR-National Bureau of Plant Genetic Resources; New Delhi in the Department of Biotechnology (DBT) funded Project "National Containment/Quarantine Facility for Imported Transgenic Planting Material". She is also pursuing her PhD in Biotechnology from Jiwaji University. She has 10 research publications to her credit in reputed journals.

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