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Molecular detection and identification of ochratoxin producing fungal genes, polyketide synthase gene (pks) gene in infected maize samples using normal PCR, RT-PCR and bioanalyzer

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Corn production was estimated to be around 790 million tonnes. Most of the corn is used for feed, food, and seed. Maize (*Zea mays* L.) is one of the cereals which serves as a main source of food, forage and processed products for industry. As a staple food it provides more than one-third of the calories and proteins in some countries. Ochratoxins are cyclic polyketides, the most potent of which is ochratoxin A (OTA). OTA has been associated with human endemic neuropathy. Large numbers of other *Penicillium* and *Aspergillus* species have since been reported to be OTA producers. The present study was undertaken with the main aim of detecting the presence of the genes encoding the production of mycotoxin, namely, ochratoxin in the infected maize samples. One hundred and thirty maize samples infected with the fungi *Aspergillus* and *Penicillium* were collected from the markets, godowns and farmers' fields. DNA isolated from such maize samples was amplified in PCR using sets of forward and reverse gene specific primers designed using using DNASTAR Lasergene 8.0 version software from original gene sequences (obtained from GENBANK) of the specific gene, *pks*. The fragments obtained were resolved on the bioanalyzer, DNA 1000 Labchip^{R}, for generating data on the size of amplified fragments. A 200 base pair fragments of was amplified in eleven samples. Bioanalyzer gives a clear picture of amplified fragments of toxin. Amplification of the gene fragments from eleven maize samples of ochratoxin producing *pks* gene fragment gene was also achieved using RT-PCR with the probe SYBRGREEN, with cT values ranging from 19 to 30 for toxin. RT-PCR not only amplifies the specific gene fragment, but also quantifies the gene product through fluorescence. This study helps in easy detection of mycotoxins present in the contaminated samples in storage which are unfit for consumption thereby avoiding the hazardous influence of such toxins on human and animal health.

Biography

S Nagalakshmi is pursuing her Ph.D. at the age of 28 years in Department of Plant molecular Biology and Biotechnology, IBT, from Acharya N.G. Ranga Agricultural University, Rajendranagar, Hyderabad. She has published more than 8 papers in reputed journals. She has participated nearly 10 seminars and conferences. Out of 10 one abstract selected for best oral presentation, one has selected for best poster presentation and one has selected for Young scientist award presentation.

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