BIOTECHNOLOGY-2011
doi:10.4172/jpb.1000240

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Biotechnology

Sequencing of 16S rDNA gene: A rapid tool for identification of endophytic bacteria from *In vitro* cultures of cashew

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Endophytic bacteria reside within plant hosts without causing disease symptoms. These bacteria generally colonize the intercellular spaces, and they have been isolated from all plant parts. One endophytic bacterium, named as KAU-EC1 was isolated from shoot cultures derived from field plants as well as *in vitro* seedlings of cashew (*Anacardium occidentale* L.). Isolation of endophytic bacteria on nutrient agar media yielded large mucoid, opaque, circular convex colonies on nutrient agar medium. Characteristics of this bacterium were studied by cultural and morphological tests. For bacterial identification, 16S rDNA sequencing is particularly important in the case of bacteria with unusual phenotypic profiles, rare bacteria, slow-growing bacteria, uncultivable bacteria and culture-negative infections. 16S rRNA molecules contain both highly conserved regions and variable regions. The highly conserved regions provide priming sites suitable for polymerase chain reaction and sequencing applications. PCR was performed for the amplification of 16S rDNA gene. 16S rDNA gene was amplified using two universal bacterial primers: $16S_{43\text{-}63}$ and $16S_{1404\text{-}1387}$. The PCR product when checked on agarose gel indicated the presence of band 1.3 Kbp. The 16S rDNA gene from KAU-EC1 was cloned in pGEMT vector, sequenced and analysed after vector and adapter editing. *In silico* analysis using bioinformatics tools revealed that sequence of KAU-EC1 showed 99 per cent homology with *Klebsiella pneumoniae* strain SA-D6-7 16S ribosomal RNA gene. This is the first study reporting endophytic bacteria in tissue cultured cashew plants. The possible role for this bacterium in the biology of cashew plant remains unknown.

Biography

Jusna Mariya P.L. has completed her graduation and post graduation from Kerala Agricultural University, Thrissur and currently she is doing Ph. D. in Agri. Plant Biotechnology at Kerala Agricultural University, Thrissur and pursuing her research work.