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Development of ISSR markers specific to mint species

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Mentha is a genus of aromatic plants in the family *Lamiaceae*. The essential oils from *M. spicata* contain d-limonene, carvone and dihydrocarvone. *M. piperita* with high menthol content also contains menthone, methyl esters particularly menthyl acetate. Mint species are not clearly distinct as hybridization between some of them occurs naturally. The objective is to develop inter simple sequence repeats (ISSRs) specific to mint species, a co-dominant molecular marker is used for genetic mapping for germplasm resources. We have developed a set of ISSRs in mint species for developing species specific markers viz., *M. arvensis, M. piperita, M. spicata, M. cardiaca, M. viridis, M. longifolia, M. gentilis* and *M. rubia*. Morphological, phytochemical and genetic differences were studied to evaluate the level and distribution of diversity among 16 genotypes of *Mentha* using both agro-morphological traits and ISSR markers. The results showed significant differences among genotypes for all agro-morphological traits programs. Morphological variation was correlated with variation in their corresponding molecular marker. The 26 ISSR primers chosen for molecular analysis revealed 820 bands, of which 808 were polymorphic. Percentage of polymorphic bands ranged from 91 to 100% according to primers tested. The generated dendrogram based on ISSR profiles divided the genotypes into five groups. Cluster analysis based on these traits grouped the genotypes into eight separate clusters. Lemi AA and Lemi K ISSR primers tested in this study yielded highly informative patterns. The generated ISSR fragments sizes ranged from 200-900 bp. Genotypes of two clusters with a good amount of genetic divergence and desirable agronomic traits were detected as promising genotypes for hybridization. Probes developed were then in future utilized for molecular breeding.

Biography

Nidaf Khan has completed his MSc in Biotechnology from Lucknow University. He completed his summer training from CSIR-NBRI and dissertation from CSIR-IITR, Lucknow. He qualified GATE (Biotechnology) 2015 examination and currently working as a Researcher with three years of research experience. He is pursuing his PhD in Biotechnology at CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow. He has one publication in peer reviewed SCI journal and submitted book chapters in national seminars. He has participated in national seminars, international conferences and hands on workshops and presented posters in national seminar organized by SFRI, Jabalpur, MP (India) and in Rastriya Vaigyanic Sanghosti organized by CSIR-CIMAP and BARC, Mumbai (India). He has delivered few lectures in symposium organized by CSIR-CIMAP, Lucknow. He has volunteered in International Conference on Medicinal and Aromatic Plants: Resource for Affordable New Generation Healthcare (ICOMP-2015) and hands-on-training on NMR technique organized by CSIR-CIMAP, Lucknow.

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