

Dr. Ajit Kumar Shasany

Dr. Shasany, contributed significantly to the medicinal and aromatic plants(MAP) research by analyzing genomes of more than 900 accessions belonging to 40 different MAP species for genetic diversity estimation, evolutionary relationships and marker identification (**Publication list**). This also resulted in releasing 33 commercially important varieties by the group leading to 22 international plant patents (**Patent list**), combining genomics and breeding tools. His contribution to Mint research is worth mentioning as CIMAP bagged CSIR Technology Award (1999); he received Young Scientist Award of CSIR (2000), Umakant Sinha Memorial award (ISCA),2003 and "SOM" award by Essential oil Association of India (2005) raising and sustaining the status of India as the highest producer of mint oil in the world. This was possible by developing high yielding varieties, 'Himalaya', 'Kosi', 'Saksham' and 'Kushal' of *M. arvensis* as well as 'Cim-Indus' and 'Cim-Madhuras' of *M. piperita*. He also identified metabolic blocks in the biosynthetic pathway of menthol in *M. arvensis* genotypes correlating with DNA Marker(12), compared the chemotypes of AFLP analyzed Indian peppermint germplasm to selected peppermint oils of other countries for variety development(30). Other notable contributions are SCAR markers in herbaceous *Phyllanthus* species to check adulteration and mis-identification(26). His group is also first to report involvement of base substitution in the plastid-encoded *rpoCl* gene for downy-Mildew-resistance in *Papaver*(23). He worked out inheritance pattern for chloroplast and nuclear DNA-derived AFLP markers for downy- mildew-resistance(11) and differentiated straw morphinan alkaloid containing genotypes(10). Similar work was carried out in *Plantago ovata*(16), *Swertia* species(5), 'Safed Musli' Complex(33). His work on DNA fingerprint analysis led to the patents for plant varieties for *Ocimum basilicum*"CIM-SAUMYA"(US7,435,877); *Phyllanthus amarus* 'CIM-Jeevan' (US7,446,243); *Artemisia annua*-'CIM-arogya' (US7,375,260), *Plantago ovata* plant named 'Mayuri' (USPP17,505) specifically in the last five year.

In secondary metabolite pathway analysis, Dr Shasany identified a transcriptional splicing mechanism regulating the expression of menthofuran in *Mentha* species (**PhD-thesis-of-student**). Carbon channeling for scent biosynthesis in petunia petals predominantly *via* aroenate route was uncovered, through RNAi approach(7). A novel 4-CL gene diverting carbon towards eugenol biosynthesis was implicated in *Ocimum sanctum* (**PhD-thesis-of-student**) in addition to characterizing other genes in the pathway (**Accession-no-HM990149-HM990156**). In *Withania somnifera* full-length genes i.e. *smt1*, *odm*, *dxr*, *hmgr* putatively involved in the sterol biosynthetic pathway leading to withanolides in *Withania somnifera* were isolated and defined(1).

Most significantly the nominee used proteomics approach to reveal the mechanism of menthol action through accelerated tubulin polymerization on cancer cell line towards apoptosis(3), which may open up the possibility towards alternative drugs for cancer therapy. This has also provided a novel medicinal use for an aromatic phytomolecule. In bioprospection, significantly contributed through collaborative work in deciphering antigenic membrane proteins in clinical isolates of *Leishmania donovani*.(4, 24, 32), *Brugia malayi* adultworm(17) and implicated Omps of *Salmonella* for reactive arthritis(29).