

Agrobacterium tumefaciens-mediated genetic transformation of black night shade (*Solanum nigrum* L.) using root explants

T. Ugandhar^{1,2}, N. Ramaswamy² and M. Rambabu^{2,3}

¹Department of Botany S.R.R. Govt Degree and P.G.College, India

²Department of Biotechnology, Kakatiya University, India

³Department of Botany, Govt Degree and P.G.College, India

An efficient variety-independent method for producing transgenic Black night shade (*Solanum nigrum* L.) via *Agrobacterium tumefaciens*-mediated genetic transformation was developed. Root explants were transformed by co-cultivation with *Agrobacterium tumefaciens* strain LBA4404 harbouring a binary vector pBAL2 carrying the reporter gene β -glucuronidase intron (GUS-INT) and the marker gene neomycin phosphotransferase (NPTII). Transgenic calli were induced in media containing 0.1 mg l⁻¹ thidiazuron (TDZ), 3.0 mg l⁻¹ N⁶-benzylaminopurine, 100 mg l⁻¹ kanamycin and 500 mg l⁻¹ cefotaxime. The putative transgenic shoot buds elongated on basal selection medium and rooted efficiently on Soilrite irrigated with water containing 100 mg l⁻¹ kanamycin sulphate. Transgenic plants were raised in pots and seeds subsequently collected from mature fruits. Histochemical GUS assay and polymerase chain reaction analysis of field-established transgenic plants and their off springs confirmed the presence of the GUS and NPTII genes, respectively. Integration of T-DNA into the genome of putative transgenics was further confirmed by Southern blot analysis. Progeny analysis of these plants showed a pattern of classical Mendelian inheritance for both the NPTII and GUS genes.

Biography

T. Ugandhar has completed his Ph.D at the age of 25 years from Kakatiya University under the guideness of Prof N. Ramaswamy Head Department of Biotechnology Kakatiya University Warangal immediately he was started his committed teaching career as a Lecturer in Botany at C.V. Raman P.G. College Mancherla in 2005 and he was appointed as Assistant Professor by APPSC at S.R.R Govt Degree and P.G. College Karimnagar. He has published 25 research articles, co-authored 2 books and guided 10 M.Phil theses. He has attended 15 national seminars and 3 international seminars and also attends 4 symposia and workshops. His major fields of teaching and research include Cytology and Cytogenetics, Genetics and Plant Breeding, Molecular Genetics, Mutation Breeding, Plant Tissue Culture and Biotechnology. He successfully applied mutation breeding to brinjals, chillies and tomatoes and developed several agronomically useful varieties. He established clonal multiplication of certain forest trees. He has a patent pending for In Vitro Propagation of Tassar Silk Plant.

tugandharbiotech@gmail.com