International Journal of Advance Research in Science and Engineering
Volume No.06, Issue No. 11, November 2017
www.ijarse.com
IJARSE
ISSN: 2319-8354

Molecular cloning and expression analysis of Auxin response factor (GaARF) from Grewia asiatica L

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Grewia asiatica is a rich resource of triterpinoids and flavonoids with its fruit acclaimed for various putative health benefits. Its full commercial exploitation is impeded due to short shelf life of its fruits and larger seed volume. To circumvent these constraints, seed abortion seems to be a viable option. One of the molecular interventions tested in number of economic crops has been to disrupt the Auxin response Factor (ARF) activity. The Aux/IAAs have been among the first auxin-regulated genes to be isolated and are the most characterized among early auxin-responsive genes. It has been hypothesized that Aux/IAA proteins are repressors that do not bind directly to AuxREs but are targeted to AuxREs by dimerizing with ARF transcriptional activators. Against this backdrop the aim of the present study included cloning and expression analysis of cDNA clones of GaARF with an ORF of 2223 bps. In silico analysis, elucidation and analysis of regulatory domains in the coding sequence and phylogenetic analysis was also performed. Further, the expression level of GaARF was also observed at different vegetative and reproductive phenophases. Transcript level of GaARF expressed maximally at pre-anthesis stage of flower development pointing towards its relation to reproductive maturity. Present investigation provides an insight for targeting GaARF as a prospective means for elucidation of reproductive maturation and fruit set without fertilization.

Keywords: Grewia asiatica; ARF; Cloning; phylogeny; Reproductive phenophases