

O-27 (170)**ISOLATION AND CHARACTERIZATION OF CYC1 GENE BY EXPRESSED SEQUENCE TAG MINING IN FENUGREEK (*TRIGONELLA FOENUM-GRÆCUM* L.)**

Sahar Aminkar, Department of Horticultural Science, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran; sahar.aminkar@gmail.com

Assist. Prof. Abdolali Shojaeiyan, Jalale-Ale-Ahmad Ave., Dept. of Horticulture, College of Agric., Tarbiat Modares University, 14115-336, Tehran, Iran; shojaeiyan@modares.ac.ir
(Presenting author)

Assist. Prof. Sajad Rashidi Monfared, Department of Biotechnology, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran; Rashidims@modares.ac.ir

Assist. Prof. Mahdi Ayyari, Department of Horticultural Science, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran; m.ayyari@modares.ac.ir

Marzieh Nasirzadeh, Department of Horticultural Science, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran; marzieh.nasirzadeh@modares.ac.ir

Fenugreek (*Trigonella foenum-graecum* L.) has a long and respected history of medicinal uses in Middle East and Persian medicine. The hypocholesterolaemic and hypoglycaemic effects of fenugreek were attributed to its major steroidal saponin, diosgenin. The knowledge of diosgenin biosynthesis pathway is derived from studies of sitosterol production through acetyl-CoA, mevalonate, isopentenyl pyrophosphate, squalene, cycloartenol, sitosterol, diosgenin. cycloeucaenol cycloisomerase (CYC1) plays an important role in the biosynthesis of diosgenin. This enzyme involved in the synthesis of plant sterols, by converting pentacyclic cyclopropyl (cycloeucaenol) sterols to tetracyclic sterols (obtusifoliol). A fulllength cDNA encoding *CYC1* was isolated from young leaves of *T. foenum-graecum* by reverse transcription-PCR. The full-length cDNA of *CYC1* was found to have a 924 bp open reading frame, encoding a protein with 307 amino acid residues. The deduced amino acid sequence of *CYC1* showed the highest identity (97%) *Medicago sativa* cycloeucaenol cycloisomerase. This study provide an important resource for the scientific community, interested in the molecular genetics and functional genomics of fenugreek.

Keywords: Cycloeucaenol cycloisomerase, Diosgenin, secondary metabolite, steroidal saponins