
RESEARCH PAPER

Studies on *in vitro* propagation and biochemical analysis of *Trigonella foenum-graecum* L.

G. PRABAKARAN¹ AND T.RAVIMYCIN²

¹PG and Research Department of Botany, Government Arts College, DHARMAPURI (T.N.) INDIA

Email : gpbitek@gmail.com; gpbitek@yahoo.co.in

²Ecology and Environment Lab, Department of Botany, Annamalai University, Annamalai Nagar, CHIDAMBARAM (T.N.) INDIA

Email : mycin_envirom@yahoo.co.in

Trigonella foenum - graecum L is a important medicinal plant which, is rare and extensively used in traditional system of medicine. It belongs to the family Fabaceae. The present study was mainly aimed to develop a protocol for the successful micro propagation and biochemical analysis of compounds present in the callus as well as in the *in vitro* plant. The explants selected for the present study includes, cotyledon, hypocotyls, shoot tip epicotyls. The shoot tips explants inoculation on MS medium with auxins and cytokinins alone and in combinations showed shoot initiation along a shoot initiation with basal callus formation. The chlorophyll pigment content in the callus with different morphology and the *in vitro* regenerated plant was assessed. Total chlorophyll value was estimated as 2.7277 mg/g. The total protein content in the *in vitro* regeneration plant and morphological different callus were estimated by Lowry's. and acryl amide gel electrophoresis. The protein content of the yield grown plants was estimated as 0.789 mg/g fresh weight and that of callus was estimated as 0.421 mg/g fresh weight. The seeds of field-grown plant as well as green friable callus obtained in 2,4-D of field - grown showed maximum amount of protein content. Peroxidase enzyme activity of callus was also determined. Green friable callus obtained from a combination of 2,4-D showed maximum peroxidase activity. The presence of secondary metabolites *in vitro* plant as well as callus indicated that *in vitro* system is a possible source for the isolation of Diosgenin.

Key words : Phytochemical, Diosgenin, *Trigonella*, Peroxidase activity, *In vitro* propagation

How to cite this paper : Prabakaran, G. and Ravimycin, T. (2012). Studies on *in vitro* propagation and biochemical analysis of *Trigonella foenum*-Graecum Linn.. *Asian J. Bio. Sci.*, 7 (1) : 88 - 91.

INTRODUCTION

In India, medicinal plants are used extensively in system on medicines like Ayurveda, Unani, Sidha and homeopathy. The country richly endowed with range of plants with medicinal value represent great nature resources. Plant biotechnology can bring many benefits to medicine, environment and Industry, it also has a wide range of possible application in food and forming, the biotechnology method of plant improvement, manipulation and selection at cellular level, plant biotechnology utilizes plant cells or tissues to improved variety of products ranging form to one other biotic or abiotic stress or possessing some unique features not possible by conventional breeding approaches. The production of secondary products is an application of tissue

culture technology. Secondary products such as gums, resins, alkaloids, antibiotics, enzyme are potentially available form cell culture technology (Luckner and Nover, 1997). *Triognella foenum graecum* Linn belongs to the family Fabaceae. It is one of an endangered plant having lots of medicinal value. The present study aims at *in vitro* studies on the plant, analysis of primary metabolites and analysis of secondary metabolites using TLC.

RESEARCH METHODOLOGY

Media preparation:

Trigonella foenum-graecum Linn belongs to the family Fabaceae, A certified seed obtained from Tamil Nadu Agricultural University (TNAU) was used in the present study. MS medium (Murashige and Skoog, 1962) was used for the