In vitro seed germination of *Trigonella foenum-graecum* L. A marvelous herb

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DOI: [https://doi.org/10.22271/allresearch.2016.v2.i6p.7664](https://doi.org/10.22271/allresearch.2016.v2.i6p.7664)

**Abstract**

A Study was conducted to access the *in vitro* germination and subsequent morphogenetic potential of seed of *Trigonella foenum-graecum* L. A Marvelous herb. Murashige and skoog’s (MS) medium used throughout the series of experiment. Seeds were inoculated on MS medium or basal medium in different concentration of Phytohormone BA, Gibberellic acid (GA₃). In *Trigonella* result obtain on both hormone. But high percentage of result obtain on 10mg/l BA than GA₃. Green callus is also found in 5mg/l BA. Elongation of shoot was also found in both hormone.

**Keywords:** *Trigonella foenum-graecum*, marvelous herb, fabaceae, fenugreek, aromatic

**Introduction**

*Trigonella* is an annual medicinal [2, 4, 8] herbs belonging to family (Fabaceae). It is emerging as a marvelous herb with a rich historical and religious background. It is commonly known as Fenugreek. It is cultivated in warm temperature and tropical regions. It cannot grow in the shade. It is cultivated throughout the country [1].

**Morphology of the plant**

*Trigonella* is an annual flowering plant. It is about 0.6 m in height. The plant prefers light (sandy) medium (loamy) and heavy (clay) soils. Leaflets 2-2.5cm long, oblanceolate, oblong. Flowers are axillary and cream in colour. It is in flower from June to August. The fruit is called Pod. Each mature brown pod contains 20 small yellow to brownish yellow seeds. Fig. (1, 2).
It is traditionally used as medicine [3]. Because the seeds are used in fever, diabetes, arthritis. Fenugreek is hot aromatic, carminative, hypoglycaemic, anti-inflammatory, Anticancer mild laxative and lactogenic herb [3]. The leaves are good source of choline [6]. Vitamin E is also present in the leaves of Fenugreek.

Material and Methods
Fresh and healthy seeds of *Trigonella* was collected from residential area. Seeds were pre soaked for 6 hours. Seeds were rinsed with running tap water, 5 minutes, washing and disinfecting the seeds in 0.1 - 0.2% solution of Hgcl$_2$ for 2-3 minutes. Further washing then 2-3 distilled water in aseptic condition. The sterilized seeds were inoculated on MS medium or basal medium in different concentration of Phytohormone i.e Cytokin in BA and Gibberellin – Gibberellic acid (GA$_3$).

Results
The main objective of the study was to register the *in vitro* germination response for quick plantlet formation and also score the data for its conservation. For this purpose sterilized seeds were inoculated on MS [7] medium or basal medium in different concentration of BA and GA$_3$. In basal medium germination process 50%. Only roots were produced, after 6 days. Maximum germination is found in (10%) concentration of hormone. Best result was obtained on MS+ BAP (10mg/l). In this 90% shoot formation occurs. Green callus is also found in one seed after 19 days. This callus is found in 5mg/l BA. Elongation of shoot was also found on 10mg/l BA. Fig. (3,4,5). This is shown in Table -1.

![Fig 3: Seed Explant showing only root formation on basal medium](image3)

![Fig 4: Seed Explant Showing Green Callus on MS+ 5mg/l BAP](image4)

![Fig 5: Seed Explant showing elongation of shoot on MS+ 10 mg/l BAP.](image5)
Another Phytohormone GA3 used in various concentrations. In basal medium Germination process 50%. Only roots were produced after 6 days. Maximum germination found in high % of GA3. Thick rooted plantlet was found on MS+ 5mg/l GA3. Elongation of shoot was also found on MS +10 mg/l GA3. Fig. (6, 7, 8). This is shown in Table -2.
Discussion

In vitro seed germination of *Trigonella* could be possible. *In vitro* seed germination I used two phytohormone, BA and GA₃ in different concentration. In both phytohormone germination was found. But best result was obtained in BAP than GA₃. Medicinal plants have been always considered a healthy [10] source of life for the people. Demand for this medicinal plant [9, 11] is increasing in both developing and developed countries due to growing recognition of natural product being non narcotic, having no side effect, easily available at affordable price. In this background *in vitro* studies on seed germination of *Trigonella* is greatly desirable from pharmaceutical view point.

Conclusion

It is concludes that the seeds of *Trigonella foenum-graecum* showed the potential for *in vitro* germination and can be used for the seedling production. The present *in vitro* studies may be the basis for further studies on biochemical aspects. Work is in the progress to develop *in vitro* protocols for isolation of the active constituents of pharmaceutical importance in *Trigonella-foenum–graecum* – A marvelous Herb.

Acknowledgements

The author express their deep sense of the gratitude to Dr. Naseem (B.R.A.B.U., Muzaffarpur) for providing the laboratory facilities for the work undertaken. I am also thankful to Dr. S.N Sharma. I am also thankful to my friends without their cooperation this work would not have been possible.

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