

Effect of mutagens on morphological characters of fenugreek (*Trigonella foenum-graecum* L.)

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Fenugreek (*Trigonella foenum-graecum* L.) is one of the oldest medicinal plants, originating in India and Northern Africa. An annual plant, fenugreek grows to an average height of two feet. The leaves and seeds, which mature in long pods, are used to prepare extracts or powders for medicinal use. In recent time mutagen have become important tools in crop improvement. These mutagens are being used to produce resistance in various susceptible crops to improve their yield and quality trait against harmful pathogens. In the present work, two different mutagenic agents viz., physical i.e. UV radiation and chemical i.e. ethidium bromide of various doses were used and seeds were also treated with both mutagens. Total 10 parameters were observed and compared with control. The screening for best mutagen was done by comparing these 10 parameters, it is clear from the obtained data that the seed treated with ethidium bromide showed better result than seed treated with ultra violet radiation and both ethidium bromide and UV.

Key words : Mutagen, Fenugreek, Ethidium bromide, Ultra violet

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INTRODUCTION

Fenugreek (*Trigonella foenum-graecum* L.) is a flowering annual plant, with autogamous flowers. This crop is native to an area extending from Iran to northern India and widely cultivated in China, India, Egypt, Ethiopia, Morocco, Ukraine, Greece, Turkey, etc. (Petropoulos, 2002; Polhil and Raven, 1981). Fenugreek leaves and seeds are consumed in different countries around the world for different purposes such as medicinal uses (anti-diabetic, lowering blood sugar and cholesterol level, anti-cancer, anti-microbial, etc.), making food (stew with rice in Iran, flavour cheese in Switzerland, syrup and bitter run in Germany, mixed seed powder with flour for making flat bread in Egypt, curries, dyes, young seedlings eaten as a vegetable, etc.), roasted grain as coffee-substitute (in Africa), controlling insects in grain storages, perfume industries, etc. (Basch *et al.*, 2003). Fenugreek can be a very useful legume crop for incorporation into short-term rotation (Moyer *et al.*, 2003) and for hay and silage for livestock feed, for fixation of nitrogen in soil and its fertility, etc. (Sadeghzade *et al.*, 2009). The production of this crop is affected by environmental stress such as: drought, salinity, chilling.

In *Trigonella foenum graecum* L. Raghuvanshi and

Singh (1974) studied the mutagenic effect of colchicines and gamma rays. Laxmi *et al.* (1983), studied a green seed coat colour of mutant in *Trigonella foenum-graecum* L., followed with treatment of 0.6 per cent MMS. Jain and Aggrawal (1987) treated the seeds of *Trigonella corniculata* and *Trigonella foenum graecum* L. with different concentration of EMS, MMS and SA (NaN₃) separately to study the effect on the level of ascorbic acid. Devi and Reddy (1990) studied sensitivity to chemical mutagens like, ethyl methane sulphonate (EMS), diethyl sulphonate (DES) and ethylene imine (EI).

Plant breeding requires genetic variation of useful traits for crop improvement. Often, however, desired variation is lacking. Mutagenic agents, such as radiation and certain chemicals, then can be used to induce mutations and generate genetic variations from which desired mutants may be selected. Mutation induction has become a proven way of creating variation within a crop variety.

In present study the objective is to screen the mutagens for better improvement of spinach.

RESEARCH METHODOLOGY

The M47 variety was selected for the experiment; the