

Mutation in *Solanum melongena* through ethyl methane sulphonate

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Abstract : The present investigation deals with the effect of Ethyl Methane Sulphonate in *Solanum melongena* L. (Eggplant). Ethyl Methane Sulphonate is an ethylating agent that has been found to be mutagenic in a wide variety of genetic tests. Chemical mutagenesis provides an inexpensive and straight forward way to generate a high density of novel nucleotides diversity in the genomes of plants. *Solanum melongena* of the potato or Solanaceae family categorized with large leaves, white to purple flowers with five-lobed corolla and fruit with numerous seeds. The edible fruits are varied in shapes and sizes. Fruits are fleshy and botanically berry type. They are cultivated as a vegetable crop. It has good amount of manganese, foliates, potassium and various type of vitamins. The present investigation has been done to know the effectiveness of Ethyl Methane Sulphonate in *Solanum melongena* after treating it with different concentrations of Ethyl Methane Sulphonate, i.e. 0.10, 0.20, 0.30, 0.40 and 0.50 percent. Several findings were noted out in concern to rate of germination and production.

(Keywords : *Solanum melongena*, Solanaceae, chemical mutagenesis, Ethyl Methane Sulphonate, germination, production)

Introduction

This paper deals with the effects of Ethyl Methane Sulphonate in *Solanum melongena* L.(Eggplant). *Solanum melongena* of the potato or Solanaceae family categorized with large leaves, white to purple flowers with five-lobed corolla and fruit with numerous seeds. The edible fruits are varied in shapes and sizes. Fruits are fleshy and botanically berry type. They are cultivated as a vegetable crop. It is served as vegetable, baked, grilled and fried form. Eggplants are a nutrient-dense food; they contain a good amount of vitamins, minerals, fibres and a few calories.

Eggplants are especially rich in anthocyanins, a type of pigment with antioxidant properties that's responsible for their vibrant colour. Anthocyanins can protect against cellular damage.

The present investigation deals with different concentrations of Ethyl Methane Sulphonate (EMS) like 0.10, 0.20, 0.30, 0.40 and 0.50 percent were tried on seeds of *Solanum melongena*. Ethyl Methane Sulphonate is an ethylating agent, a chemical mutagen (Venkatrajan and Subhash¹, 1983; Wellensick², 1965; Kumar³, 1995; Chary and Bhalla⁴, 1988).

The mentioned treatment was carried out to score mutant. Detailed morphological of control and treated cultivars have been made and variations have been noted.

Experimental

Material and Methods:

Materials for the present investigation include 100 seeds of *Solanum melongena* treated with different concentrations of EMS.

Table-1

Name of species	Seed taken for sowing
<i>Solanum melongena</i>	100

Table-2

Name of species	Percentage concentration of EMS
<i>Solanum melongena</i>	0.10%
	0.20%
	0.30%
	0.40%
	0.50%

Before treating seeds with EMS, they were kept in distilled water for 12 hours and after treatment they were washed in running tap water. Finally, the seeds were dried for sowing. In this way treated seeds were grown for recording morphological, ecological and cytological characters.

Result and Discussion

Lower concentrations of chemical mutagen stimulate significant changes in the

morphological character and productivity of the plant, such as plant length, fruit number and fruit size, showed many interesting deviations. 0.20% and 0.30% concentration of EMS treated plants showed many interesting deviations, like maximum change in fruit size and fruit numbers. This was true for C_1 and C_2 generation. However, the intensity of changes were less C_2 than C_1 generation. Many researchers have reported such type of result (Adamu and Aliya⁵, 2007; Borker and More⁶, 2007; Chandra and Choudhary⁷, 1991; Sparrow⁸, 1961).

Table-1 Morphological attributes of control and EMS treated plants of *Solanum melongena*

Control and treated plant	Fruit size (Average)	Fruit number per plant (Average)
Control	2.5cm	11
0.10%	3.2cm	14
0.20%	4.3cm	17
0.30%	5.0cm	18
0.40%	2.7cm	9
0.50%	2.0cm	4

According to many researchers like Kumar³ (1995), at higher doses of treatment, the seedling lethality takes place due to physiological imbalance, which is non-genetic but fatal for all, but lower doses enhance the productivity.

Conclusion: Mutation is considered to be an alternative to naturally occurring variation as the

source of germ plasm for plant improvement and as an easier alternative to hybridization and recombination in plant breeding. New concepts that suggest that mutation is not largely deleterious in their effect have been reviewed. The relevance of these concepts to some aspects of the use of chemical mutagen like Ethyl Methane Sulphonate in plant improvement has been considered.

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