



SHORT COMMUNICATION

GAMMA RAYS INDUCED MUTAGENIC STUDIES IN *CATHARANTHUS ROSEUS* (L.) G. DON., AN IMPORTANT ORNAMENTAL PLANT

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ABSTRACT

A study was conducted to estimate the effect of gamma rays on growth and yield traits in periwinkle (*Catharanthus roseus* (L.) G. Don), an important horticulture plant. The seeds were treated with different levels of gamma rays (20, 25 and 30). Morphological parameters were analysed on the 30th day, like plant height, days of first flower, plant height, fresh weight per plant, dry weight per plant, root fresh weight per plant and root dry weight per plant. The morphological parameters were decreased with increasing levels of gamma rays doses.

INTRODUCTION

Catharanthus roseus is an important horticultural plant belonging to the family Apocynaceae [1]. Apart from its horticultural and landscaping potential, the plant is famous for its secondary metabolite contents and medicinal uses [2]. There are numerous researches about its medicinal potential [3, 4], but the methods of increasing or exploring the genetic variations and mutation chances in this plant is scanty.

Mutation breeding is the fast growing area in all crop plants and also ornamental plants [5]. The wide chances of mutations in variety releasing and exploring new hybrids are widely studied [6-9]. Radiations like gamma can be effectively utilized as a mutation inducing agent and can alter the morphological and physiological characteristics of the plant [10,11,12]. Also the methods like chemical mutagenesis by employing chemicals like EMS also reported from crop plants [13].

The present investigation was conducted to study the effect of gamma rays in inducing mutation in *Catharanthus roseus* (L.) G. Don., an important ornamental plant.

MATERIALS AND METHODS

The dry seeds of periwinkle were collected from J. P. Laboratories, Virudhunagar District, Tamil Nadu. The

gamma ray was subjected with 05, 10, 15, 20, 25, 30, 35, 40, 45 and 50KR of CO60 at Indra Gandhi Centre for Atomic Research, Kalpakkam, Tamil Nadu, India and untreated dry seeds served as control. These treated seeds were sown on 50 seeds with spacing of 30 × 20 cm in plots. The experiment was conducted at Department of Botany, Annamalai University during the year 2016. The experiment was set up in a completely randomized design with eleven treatments in three replications, observations regarding germination percentage and seedling vigour index (SVI) were recorded on 10th day after sowing and the results were analysed statistically [14].

RESULTS AND DISCUSSION

The treatment reduced the germination percentage in periwinkle with dosage of gamma rays. This type of germination reduction was earlier reported blackgram [15], soybean [16] and rice [17]. Effect of gamma rays on growth and yield parameters in periwinkle in M1 generation was given in table 1. Packiaraj [18] reported the growth reduction in gamma rays treatments in cowpea varieties. In the present experiment, 30th day plant height, days of first flower, plant height, fresh weight per plant, dry weight per plant, root fresh weight per plant and root dry weight per plant showed a decreasing trend when compared to the control (table 1) and days to first flower increased with increase in dose of gamma rays (table 1)

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Table 1: Effect of gamma rays on growth and yield parameters in periwinkle in M1 generation

Gamma rays doses	30 th day plant height	Days of first flower	Plant height	Fresh weight per plant	Dry weight per plant	Root fresh weight per plant	Root fresh weight per plant
control	8.25±0.24	41.00±1.20	80.50±2.41	158.00±4.74	47.56±2.98	23.20±0.69	8.96±0.52
20KR	6.30±0.18	47.05±1.41	70.89±2.12	150.68±4.52	43.86±2.72	16.83±0.50	8.05±0.42
25 KR	5.13±0.15	48.65±1.45	62.24±1.86	146.32±4.38	41.18±2.63	15.33±0.45	7.16±0.13
30 KR	4.20±0.12	51.05±1.53	58.76±1.76	141.77±4.25	38.29±2.52	14.13±0.42	5.45±0.29

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