

RESEARCH NEWS

**A STABLE AFRICAN VIOLET (*Saintpaulia ionantha* H. Wendl.)
MUTANT WITH A DYNAMIC FLORAL COLOUR PATTERN
INDUCED BY MUTAGENESIS**

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Flower colour is a major character that decides the attractiveness of ornamental plants, and hence, production of new varieties with new flower colors has a significant economic importance. Mutation breeding, an established method for floral improvement, has played a major role in the development of new mutants in a relatively short period of time. The use of colchicine, a chemical mutant, has shown to be a simple and rapid method for mutation breeding. Further, irradiation techniques for breeding create variability in colour and shape of flowers due to genetic distortion, molecular alteration and physiological effects.

African violet (Family Gesneriaceae) is a herbaceous plant grown as a potted ornamental. In general, different flower colors and shapes of stable African violets come from classical breeding of the original plant. The present study reports on the development of a stable mutant in African violets with a dynamic flower color pattern induced by colchicine. Subsequently, through gamma irradiation, the dynamic color pattern of the stable mutant has been fixed. The experiment was conducted in a greenhouse at the Royal Botanic Gardens, Peradeniya, from January 2002 to March 2005. A variety of African violets having leaves with green upper surface and flowers of uniform purple color with frilled edges and five petals arranged in a single row was selected. Leaves were cut, keeping intact 2.5 cm of the petiole. Petiole bases were dipped in different concentrations of colchicine solutions (0%, 0.04%, 0.06% and 0.09%). The treated leaves were removed at different times (21.5, 22.5, 23.5 and 48 h) from the solutions. They were planted in a mixture of river sand and leaf litter (1:1) and kept in a 70% shaded greenhouse. Morphological characters were observed for three generations over a period of 18 months. Thereafter, a plant with attractive floral and foliar variation was selected and its leaves were irradiated in a ⁶⁰Co - gamma cell at 0, 0.5, 1.0, 1.5 and 2.0 krad. Irradiated leaves were replanted in the above potting mixture and observations were made again for three generations, over a period of 18 months.

Colchicine treated plants exhibited different responses, depending on the colchicine concentration and time of exposure. In the first generation, at 0.06% colchicine and 22.5 h dipping time, 5% of the plants produced by the variety possessed white flowers with purple margins and apple green leaves.

These flowers gradually turned into a purple color 7 days after flowering. This dynamic flower color pattern was observed in all 3 generations. The control and other treatments did not show any attractive changes. When this mutant was irradiated at 1.0 krad, the dynamic color pattern was no more observed in subsequent generations. At 2.0 krad, all samples were dead, and other treatments did not show special changes in flower color. Thus, the dynamic colour pattern of the flowers was inhibited and the floral color pattern was fixed at 1.0 krad gamma radiation.