

Nattapong Janjula 2012: Embryo Culture and Induced Mutation *in vitro* Culture on *Globba* spp.

Master of Science (Horticulture), Major Field: Horticulture, Department of Horticulture.

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“*Globba*” is extraordinary ornamental plant with high demand in the international market due to its magnificent shape. The major importers are Japan and the Netherlands. In Thailand, use of globba as a cut flower or potted plant is not widespread because of lack of variation, unnoticeable colors, and insufficient information on production. This study thus covered embryo culture, appropriate potting media, seasonal growth after culturing, and chemical and physical mutation induction. The results show that cutting the micropyle could highly increase the growth and survival rate of embryos. Furthermore, the most appropriate planting medium is chaff:sand:peatmoss (1:1:1), which showed the highest survival rate at 94.44%. Moreover, globba from tissue culture could grow in any season and provided long inflorescences (9 cm), which is suitable for producing of cut flower or potted plant. Treatment with colchicine had no effect on growth rate *in vitro*, but resulted in earlier flowering, thicker bracts, and bigger petals. Mutations detected included thicker stems, dark green leaves, striped leaves, tapered leaves, flowers with semi-pendulous form, and rounded or slender bracts. After treatment with oryzalin, the plants were shorter and thicker with more numerous side shoots, larger roots and smaller leaves. When seedlings were exposed to acute gamma radiation the survival rate decreased. The $LD_{50(60)}$ was 98.89 Gray and $GR_{50(60)}$ was 58.85 Gray. The seedlings exposed to 20 and 40 Gray radiation exhibited more side branches than normal 140.68 and 117.87%, respectively. In the M_1V_2 generation some cells developed into callus, with subsequently generated new shoots. One of the plants was albino. When seedlings were treated with both colchicine and gamma radiation, at the concentration of 500 mg/l for 12 hr. the $LD_{50(60)}$ was 45.85 Gray, the seedlings were small and the leaves were apple green. At the concentration of 500 mg/l for 24 hr. the $LD_{50(60)}$ was 44.07 Gray and the control leaves were dark-green, with thick stems, and thick glossy leaves. Most of the shoots from radiated plants were grown from cells that were light brown.

Student's signature

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