

Thesis Title	Effect of Radiation on Mutation of <i>In Vitro</i> Sacred Lotus cv. "Sattabut"
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ABSTRACT

Shoot multiplication of sacred lotus(*Nelumbo nucifera* Gaertn.) cv. "sattabut" through tissue culture technique was studied. The best method was achieved from cultured in liquid on solid media of half strength Murashige and Skoog 1962(1/2 MS) supplemented with 3 μ M IAA and 15 μ M 2iP and gave about 14.24 buds and 21.83 leaves(3.28 square centimetres in leave area and 51.84 centimetres long) and 11.42 roots(about 3.38 centimetres long) after 24 weeks of incubation. The mutaion was induced by treated plantlets with gamma and X-rays after 4-6 weeks old. The *in vitro* plants were treated with acute gamma rays at the dose of 0 2 3 4 5 and 6 krad in randomized complete block designs with 5 blocks and 6 treatments, as well as the X-rays were used at the dose of 0 1 2 3 4 and 5 krad. The 2 krad dose of gamma rays and X-rays gave 50% survival plants (lethal death 50). The effect of gamma and X-rays performed 21 altered characters. The mutants from 1 2 krad gamma and X-rays showed long secondary roots, many adventitious roots and also gave better growth, healthy rhizomes and new shoots. Most plants treated with 3-5 krad gamma and X-rays showed abnormal characters which growth was less than the normal plants and showed vitrification, chlorosis, curl petioles and did not produce lateral buds, secondary roots and rhizomes. Plants treated with 6 krad gamma rays were died within 4 weeks. When the root tips were cytologically studied, the diploid chromosome number was 16 and stoma length was 2.46 micron. Two groups of aneuploidy cells were achieved from plants irradiated with 3 and 4 krad gamma and X-rays, the chromosome numbers were 2n=18 and 20 which showed stoma lengths were 3.43 and

4.34 micron respectively. The 4 krad dose of gamma rays showed abnormal stomata which were cyclocytic and deformity.