

# PHYSIOLOGICAL AND MOLECULAR CHARACTERIZATION SEVERAL MUTANT ORCHID PLANTS *Spathoglottis plicata*

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## ABSTRACT

From the previous research , a number of mature mutant *Spathoglottis plicata* orchids were obtained from the irradiation of seeds with X-rays. The aim of this study was to identify the physiological and genetic profile of *S. plicata* orchids .

There are 4 groups of mutants according to seed irradiation doses which are the origin of this mutant plant, including 6, 12, 18 and 24 rad and wildtype groups (Control), which have several prominent morphological variations. Physiological variation will be seen from the ability of photosynthesis, chlorophyll content, water conductance (stomatal conductivity, and transpiration, total protein and catalase activity. Chlorophyll content was measured with Winterman and De Mots method, whereas photosynthesis rate, water conductivity and some related parameters are measured with *portable photosynthetic apparatus* Li-Cord (LI-6400 version 5) . Determination of protein content was carried out by the Bradford method with a standard bovine serum albumin (BSA) protein, while the catalytic activity was determined by spectrophotometry. Molecular variation is detected from DNA polymorphism based on PCR-RAPD.

The results of the study show that the rate of photosynthesis and transpiration, chlorophyll content and water conductance of mutant groups have no different from wildtype. This means that mutant plants still have the same physiological performance as *wildtype* plants. The total protein content and catalytic activity of mutant plants also have no different with *wildtype*. This implies that genetic changes (mutations) that occur are not related to genes that regulate photosynthesis, chlorophyll biosynthesis and catalase activity, although variations in genetic levels of mutants are found.

Kata Kunci: *physiological and genetic characterization, RAPD, Spathoglottis plicata*