

UNIVERSITI TEKNOLOGI MARA

**COLCHICINE INDUCED
MUTATION
AND ENHANCEMENT OF
THE STEVIOL GLYCOSIDE
CONTENT IN
*Stevia rebaudiana***

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MSc


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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Stevia rebaudiana is a sweet herb that belongs to the family Asteraceae. Steviol glycosides, a natural sweetener derived from *Stevia* leaves are 100–300 times sweeter than sucrose and contain a complex mixture of sweet diterpene glycosides. The mutagenic effect of colchicine to improve leaf and steviol glycosides yield in stevia was investigated. Stevia plant were treated with five different colchicine concentrations (0.5%, 1.00%, 1.50%, 2.0%, 2.5% and 0.0% act as control) for 48h. The plants were arranged in a completely randomized block design. Treated plants were characterized based on morphological traits such as plant height, leaf length and leaf thickness. The results obtained revealed significant difference ($p \leq 0.05$) in the morphological traits of the mutants when compared with the control. Overall, 2.00% colchicine concentrations resulted in higher average plant height by 36.0% \pm 0.6 leaf length increments by 43.0% \pm 0.7 and the leaf thickness increment by 5.0% \pm 0.1. The improvement of the mutants' traits is concentration dependent and increases with increment in colchicine concentration. Therefore it is suggested that 2.0% concentration should be applied in improving stevia growth and yield related traits.

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