

**UNIVERSITI TEKNOLOGI MARA**

**ANTIMICROBIAL ACTIVITY OF *IN VITRO* MELASTOMA DECEMFIDUM  
PLANT EXTRACT AND ISOLATION  
OF PARTIAL CHALCONE  
SYNTHASE GENE**

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Dissertation submitted in partial fulfillment  
of the requirements for the degree of  
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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

*Melastoma decemfidum* (*M. decemfidum*) is a medicinal plant that belongs to the family Melastomataceae. It can grow wild, but difficult to find as compared to other species of Melastomataceae. This plant was reported to produce bioactive flavonoids, having antimicrobial activities. The flavonoid biosynthesis pathway involves a key enzyme called chalcone synthase (*CHS*). The present study was aimed to determine the antimicrobial activities of different concentrations of extracts and to isolate and amplify the *CHS* gene from *in vitro* *M. decemfidum* plant. The antimicrobial activities were determined using agar disc diffusion method against tested microorganisms which include Gram positive bacteria (*Staphylococcus aureus*), Gram negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa* and *Salmonella typhimurium*) and fungi (*Candida albicans* and *Aspergillus brasiliensis*). Genomic DNA was extracted and a partial *CHS* gene was amplified using designed primers. Finding showed that *S. aureus* was the most sensitive towards leaves and whole plant extracts, while *A. brasiliensis* were resistant to both extracts (leaves and whole plant extract). The range of MIC values for the leaves and whole plant extracts were 50 to 200 mg/ml. While the MBC and MFC range from 100 to 200 mg/ml. The amplified PCR products with the approximate size of 136 and 140 nucleotide base pairs were obtained from leaves and whole plant extract. This is the first report to describe the isolation of *CHS* gene from *in vitro* *M. decemfidum*.

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