





**DEVELOPMENT OF FOOD COLORANT FROM CERI TERENGGANU (*Lepisanthes fruticosa* (Roxb.) Leenh) BY USING THREE DIFFERENT EXTRACTION METHODS**

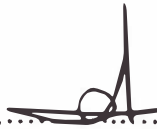
**By  
CHONG SHU PEI**

**Research Report submitted in partial fulfillment of  
the requirements for the degree of  
Bachelor of Food Science (Food Technology)**

**DEPARTMENT OF FOOD SCIENCE  
FALCULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
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## ENDORSEMENT

The project report entitled **development of food colorant from Ceri Terengganu (*Lepisanthes fruticosa* (Roxb.) Leenh)** by using three different extraction methods by **Chong Shu Pei**, Matric No. **UK 16460** has been reviewed and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of food science in partial fulfillment of the requirement of the degree of Bachelor of Food Science (Food Technology) , Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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## DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

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## ABSTRACT

This research is to develop the potential natural food colorant from Ceri Terengganu (*Lepisanthes fruticosa* (Roxb.) Leenh.) and to determine the highest yielding of anthocyanin in solvent extraction. There are four experiment was conducted in this studies which included comparison of three different extraction methods of anthocyanin from Ceri Terengganu, effect of temperature, light exposure and ascorbic acid of anthocyanin from Ceri Terengganu. From extraction experiment, there are three different extraction methods were used which include extraction of anthocyanins from different medium such as water, 1% HCl, mixture of 1% HCl and ethanol and mixture of water and ethanol, acetone extraction and chloroform partition of anthocyanins and methanol extraction. The maximum amount yield of anthocyanin is by using acetone extraction and chloroform partition of anthocyanins method which is 321.54 mg/l and was further analysis with other three effects. For effect of temperature experiment, Ceri Terengganu anthocyanin extract was analyzed with range of temperature 25-80°C in 6 hour. The results indicate that the thermal degradation of anthocyanins followed first-order reaction kinetics and degraded faster as temperature increases. In effect of light on anthocyanin, anthocyanin extract best stored in the dark. The last experiment that conducted was effect of ascorbic acid on anthocyanin where control sample (Ceri Terengganu extract) and fortified sample (Ceri Terengganu extract added 30 mg/100 ml ascorbic acid) was prepared, kept in refrigerated condition at 4°C in 7 week and was compared among the sample. The result shows that anthocyanin is unstable in the present of ascorbic acid. These initial findings must be further studied in more controlled conditions to understand the stability of anthocyanins which can be affected by many factors. The information from this studies can provide a basic knowledge for future research to develop Ceri Terengganu anthocyanin extract has a high potential to be used as a natural food colorant.

## ABSTRAK

Kajian ini mengenai memperkembangkan kepotensian pewarna makanan semula jadi dari Ceri Terengganu (*Lepisanthes fruticosa* (Roxb.) Leenh.) dan menentukan penghasilan antosianin yang tertinggi dalam pengekstrakan pelarut. Terdapat empat experiment telah dijalankan dalam kajian ini termasuklah perbandingan tiga kaedah pengekstrakan yang berbeza antosianin dari Ceri Terengganu, kesan pendedahan suhu, cahaya dan asid askorbik terhadap antosianin dari Ceri Terengganu. Dalam eksperimen pengekstrakan, terdapat tiga kaedah pengekstrakan yang berbeza telah digunakan termasuk pengekstrakan antosianin daripada medium yang berbeza, iaitu air, 1% HCl, campuran antara 1% HCl dengan etanol dan campuran antara air dengan etanol, pengekstrakan aseton dan kloroform pembahagian daripada antosianin dan pengekstrakan metanol. Hasil jumlah maksimum antosianin yang terkumpul adalah dengan menggunakan kaedah pengekstrakan aseton dan pembahagian kloroform daripada antosianin, iaitu sebanyak 321.54 mg/l dan ekstrak Ceri Terengganu tersebut diteruskan dengan tiga analisis eksperimen selanjutnya. Dalam uji kaji kesan suhu, ekstrak Ceri Terengganu antosianin telah dianalisis dengan julat suhu 25-80°C selama 6 jam. Keputusan menunjukkan bahawa penurunan suhu antosianin mengikuti tindak balas tertib pertama kinetik dan menurun lebih cepat apabila suhu meningkat. Dalam Kesan cahaya terhadap antosianin, antosianin boleh disimpan lebih lama dalam keadaan yang gelap. Experiment terakhir yang dijalankan ialah kesan asid askorbik terhadap antosianin di mana sampel kawalan (Ceri Terengganu ekstrak) dan sampel bahan tambahan (ekstrak Ceri Terengganu yang ditambah 30 mg/100 ml asid askorbik) telah bersedia, disimpan dalam peti sejuk pada suhu 4°C dalam 7 minggu dan dua sampel tersebut dibandingkan. Keputusan menunjukkan antosianin adalah tidak stabil dalam kehadiran asid askorbik. Penemuan awal ini mesti terus dikaji dalam keadaan yang lebih terkawal untuk memahami selanjutnya tentang kestabilan antosianin yang boleh dipengaruhi oleh banyak faktor. Maklumat daripada kajian ini dapat menyediakan pengetahuan asas untuk penyelidikan pada masa hadapan untuk membangunkan ekstrak antosianin Ceri Terengganu mempunyai potensi yang tinggi untuk digunakan sebagai pewarna makanan semula jadi.