

IDENTIFICATION OF DNA MARKERS IN TIGER GROUPER  
*Epinephelus tigrus* FROM THE MALAYSIAN POPULATION

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Identification of dna marker in tiger grouper (*Epinephelus fuscoguttatus*) from Kedah population / Wan Mohd Redhuan Wan Azmi.

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**HAK MILIK**  
PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

IDENTIFICATION OF DNA MARKER IN TIGER GROUPER  
(*Epinephelus fuscoguttatus*) from Kedah population

By  
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**FAKULTI AGROTEKNOLOGI DAN SAINS MAKANAN  
UNIVERSITI MALAYSIA TERENGGANU**

**PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK ILMIAH I DAN II**

Adalah ini diakui dan disahkan bahawa laporan ilmiah bertajuk:

Identification Of DNA marker in Tiger Grouper (*Epinephelus fuscoguttatus*) from Kedah Population

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Oleh Wan Mohd Redhuan Bin Wan Azmi , No.Matrik UK 13676 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Perikanan dan Akuakultur sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah Sarjana Muda Sains Agroteknologi (Akuakultur), Fakulti Agroteknologi dan Sains Makanan, 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.

Signature : .....  .....

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## ABSTRACT

A study to clone and identify DNA marker in Tiger Grouper (*Epinephelus fuscoguttatus*) in Kedah population was carried out. In this study, DNA from four population of Tiger grouper that from Bali, Kedah, Langkawi and Sabah was extracted from tissue muscles and then used as a template for Polymerase Chain Reaction (PCR) amplification using RAPD-PCR technique. In this PCR Amplification, three types of primer that OPA-01, OPA-11 and OPA-20 had used to produce DNA profile from these four population. Result showed that only one polymorphic fragment sized 504 bp exist from sample *E. fuscoguttatus* from Kedah population by using primer OPA-01. After that, this fragment was isolated and purified for cloning purpose. In cloning, this fragment was ligated using cloning vector pTZ57R/7 sized 2886 bp and transformation had done using bacteria cell *E. coli*. Cloning recombinant had successfully got by used plasmid sized ~3300 bp. From the result of BLAST showed that there have no significant similarity found and that's mean there have no reported that this sequence have found yet and also this result showed and also maybe it specific for species *E. fuscoguttatus*. It expected because sequence of *E. fuscoguttatus* just 0.00002% only compared with model organism zebra fish (*Danio rerio*). The future study about this experiment that can design primer according to the cloned sequence and this could be easily and effectively to determine between populations using PCR technique.

## ABSTRAK

Satu kajian telah dijalankan untuk mengklon dan mengenalpasti penanda DNA pada Kerapu Harimau (*Epinephelus fuscoguttatus*) dari populasi Kedah. Dalam kajian ini, DNA ikan kerapu dari empat populasi iaitu Bali, Kedah, Langkawi dan Sabah telah diekstrak dari tisu otot. DNA yang diperoleh menunjukkan ianya berkualiti dan sesuai digunakan dalam amplifikasi PCR. Dalam amplifikasi PCR, sebanyak tiga jenis primer iaitu OPA-01, OPA-11 dan OPA-20 telah digunakan bagi menghasilkan profil DNA daripada keempat-empat populasi. Hasil kajian menunjukkan terdapat satu fragmen polimorfik bersaiz 504 bp yang hanya wujud dalam sampel *E. fuscoguttatus* dari populasi Kedah iaitu dengan menggunakan primer OPA-01. Seterusnya fragmen ini dipencilkan dan dituliskan bagi tujuan pengklonan. Dalam pengklonan, fragmen ini telah diligasikan dengan menggunakan vector pengklonan pTZ57R/7 bersaiz 2886 bp dan transformasi dilakukan menggunakan sel bacteria *E. coli*. Klon rekombinan telah berjaya diperoleh dengan plasmid bersaiz ~3300 bp dan dilakukan penjujukan. Hasil jujukan yang diperoleh kemudiannya dilakukan analisis bioinformatik. Analisis BLAST menunjukkan jujukan ini tidak mempunyai padanan yang signifikan dengan mana-mana jujukan sedia ada di pangkalan data GenBank. Ini menunjukkan jujukan tersebut tidak pernah dilaporkan sebelum ini atau ia mungkin jujukan yang spesifik kepada spesis *E. fuscoguttatus*. Ini adalah sesuatu yang dijangka kerana jujukan *E. fuscoguttatus* hanya berjumlah 0.00002% sahaja berbanding dengan organism model ikan zebra (*Danio rerio*). Hasil kajian ini boleh digunakan untuk kajian lanjutan iaitu membangunkan primer bagi populasi Kedah yang boleh menyumbang dalam kajian pembiakbakaan terpilih yang akan seterusnya dapat meningkatkan kualiti ikan yang sangat berpotensi ini.