

BEHAVIOUR STUDY OF *Lates calcarifer* AND *Caligus* sp.  
TREATED WITH METHANOLIC EXTRACT OF *Melaleuca*  
*cajuputi*

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**BEHAVIOUR STUDY OF *Lates calcarifer* AND *Caligus* sp. TREATED WITH  
METHANOLIC EXTRACT OF *Melaleuca cajuputi***

**By**

**Mohd. Shahrul Hafiz Bin Abdul Ghani**

**Research Report submitted in partial fulfillment of  
the requirement for the degree of  
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DECLARATION AND VERIFICATION REPORT  
FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled:  
BEHAVIOUR STUDY OF *Lates calcarifer* AND *Caligus* sp. TREATED WITH  
METHANOLIC EXTRACT OF *Melalueca cajuputi* by Mohd Shahrul Hafiz Bin Abdul  
Ghani, Matric No. UK 23671 have been examined and all errors identified have been  
corrected. This report is submitted to the Department of Marine Science as partial  
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## ABSTRACT

This experiment determined the effect of *Melalueca cajuputi* extract to behaviour of juvenile sea bass, *Lates calcarifer* and *Caligus* sp. The 96h static bioassay experiment was conducted to determine the median lethal concentration (LC<sub>50</sub>) for *L. calcarifer* to *M. cajuputi* methanolic extract. One hundred twenty *L. calcarifer* measuring 7.5 – 9.0 cm total length and 10.0 – 15.0 g were used for the experiment. Ten tanks were filled with 40 L aerated dechlorinated water and the salinity range between 12 ppt to 15 ppt. The *M. cajuputi* methanolic extract was introduced at different concentrations (80 mg/l, 90 mg/l, 100 mg/l, 110 mg/l, and 120 mg/l). The 96h – LC<sub>50</sub> of *M. cajuputi* methanolic extract to juvenile is 102.06 mg/l with 95% confident limit of 89.25 – 118.18 mg/l. The changes behaviour exhibited by the fish includes agitated behaviours (aggression, stunned posture, frequent surface to bottoms movements, erratic swimming), respiratory distress (air gulping, vertical posture with exposed snout, excessive mucus secretion) and abnormal nervous behaviours (sluggish and swilling movement, state of motionless, sudden darts, different postures). The agitated behaviour, respiratory distress and abnormal nervous behaviour increased with increased concentration of the *M. cajuputi* methanolic extract and time of exposure. The *Caligus* sp. behaviour changes and death were observed during *M. cajuputi* extract test. Results of the tests provided an information of using *M. cajuputi* extract as an antiparasite agent in controlling ectoparasite on sea bass.

Kajian Tabiat *Lates calcarifer* dan *Caligus* sp. Selepas Dirawat dengan ekstrak methanol *Melalueca cajuputi*

ABSTRAK

Eksperimen telah dijalankan bagi menentukan kesan ekstrak *Melalueca cajuputi* terhadap tabiat juvenil ikan siakap, *Lates calcarifer* dan *Caligus* sp. Eksperimen 96 jam bio esei statistik dilakukan untuk menentukan kepekatan kematian (LC<sub>50</sub>) untuk *L. calcarifer* terhadap ekstrak metanol *M. cajuputi*. Seratus dua puluh ekor *L. calcarifer* berukuran 7.5 – 9.0cm dan berat 10.0 – 15.0g digunakan untuk eksperimen. Sepuluh tangki diisi dengan 40 L air tanpa bahan klorin dengan kemasinan antara 12ppt hingga 15ppt. Ekstrak metanol *M. cajuputi* diperkenalkan pada ikan siakan dengan kepekatan yang berbeza (80 mg/l, 90 mg/l, 100 mg/l, 110 mg/l, and 120 mg/l). LC<sub>50</sub> ekstrak metanol *M. cajuputi* terhadap juvenil ikan siakap ialah 102.06 mg/L dengan 95% aras keyakinan antara 89.25 hingga 118.18 mg/L. Perubahan tabiat yang ditunjukkan ialah tabiat kegelisahan (agresif, kedudukan menegak, kerap ke permukaan dan ke bawah permukaan, corak renang tidak menentu), masalah sistem pernafasan (mengambil udara, kedudukan tegak dengan muncung terdedah, rembesan mukus yang berlebihan) dan tingkah laku yang tidak normal berkaitan saraf (pergerakan secara perlahan dan berputar, keadaan bergerak, berhenti secara tiba-tiba, kedudukan yang berbeza). Perubahan tabiat gelisah, gangguan pernafasan dan tingkah laku yang tidak normal pada saraf meningkat selari dengan kepekatan meningkat dengan *M. cajuputi* ekstrak metanol dan masa pendedahan. Perubahan tabiat *Caligus* sp. dan masa yang diambil untuk membunuh *Caligus* sp. menggunakan ekstrak akueus *M. cajuputi* metanol juga

meningkat dengan kepekatan peningkatan ekstrak. Keputusan ujian yang diberikan maklumat asas dalam menggunakan *M. cajuputi* ekstrak metanol sebagai agen antiparasite dalam mengawal ektoparasite pada ikan siakap.