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Sperm quality of african catfish (*Clarias gariepinus*) broodstock
fed on pellet supplemented with fish oil / Nurnajjah Baharom.

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PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

SPERM QUALITY OF AFRICAN CATFISH (*Clarias gariepinus*) BROODSTOCK
FED ON PELLET SUPPLEMENTED WITH FISH OIL

By
Nurnajjah Bt. Baharom

Research Report submitted in partial fulfillment
of the requirements for the degree of
Bachelor of Agrotechnology Science (Aquaculture)

Department of Fisheries Science and Aquaculture
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
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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:

Sperm Quality of African Catfish (*Clarias gariepinus*) Broodstock Fed on Pellet Supplemented with Fish Oil oleh Nurnajjah Bt. Baharom, No.Matrik UK 13008 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 acknowledge.

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ABSTRACT

This study was conducted to determine the effect of pellet supplemented with fish oil on sperm quality of broodstock *Clarias gariepinus*. Male broodstocks of African Catfish, *Clarias gariepinus* were divided into two treatments. Treatment A was fed on one experimental diet (fish oil pellet containing 6% fish oil) and Treatment B was fed on one control diet (non-fish oil pellet). The feeding experiment occurred for 6 weeks. The broodstocks were fed twice daily by 1.5% of body weight. Sperm quality was measured by sperm count method using hemocytometer during initial (0 days) and final experiment (after 6 weeks). Sperm concentration per ml, total sperm count and milt volume expressed for each treatment was done to compare the sperm quality between both treatments. Result of the study showed that there was an increase in sperm concentration per ml of broodstock in Treatment A from $1.282 \pm 0.422 \times 10^{10}$ to $1.359 \pm 0.420 \times 10^{10}$ whereas in Treatment B, sperm concentration per ml decreased from $8.958 \pm 3.424 \times 10^9$ to $7.047 \pm 2.370 \times 10^9$. Statistical analysis showed no significant difference in sperm concentration for both treatments. The milt volume expressed during initial experiment of both treatments was not significantly different with 4.305 ± 2.493 ml and 4.532 ± 3.261 ml for Treatment A and Treatment B respectively. Treatment B showed higher milt volume after 6 weeks 3.870 ± 3.305 ml compared to Treatment A 2.643 ± 2.609 ml. During the initial experiment, average of total sperm count in each broodstock was $5.377 \pm 2.811 \times 10^{10}$ and $4.186 \pm 2.889 \times 10^{10}$ for Treatment A and Treatment B respectively. After 6 weeks the total sperm count in Treatment A was higher ($3.433 \pm 2.883 \times 10^{10}$) compared to Treatment B ($2.246 \pm 1.534 \times 10^{10}$). As a conclusion, the sperm quality in broodstock of *Clarias gariepinus* was not significantly affected by pellet supplemented fish oil possibly because of the concentration of fish oil was not optimum. Increasing the concentration of fish oil might be able to affect the sperm quality significantly. Further study need to be done to look into this aspect. In addition stress might be a factor that can reduce the sperm quality of broodstock during the conditioning process.

ABSTRAK

Kajian ini telah dijalankan untuk menentukan kesan pellet makanan tambahan minyak ikan ke atas kualiti sperma induk ikan keli Afrika, *Clarias gariepinus*. Induk jantan Keli Afrika, *Clarias gariepinus* telah dibahagikan kepada dua rawatan. Rawatan A telah diberi makan pellet minyak ikan (mengandungi 6% minyak ikan) dan Rawatan B diberi makan pellet bukan minyak ikan. Pemberian makanan telah dijalankan selama 6 minggu. Induk telah diberi makan dua kali sehari berdasarkan 1.5% berat badan. Kualiti sperma telah diukur dengan kaedah kiraan sperma menggunakan hemocytometer semasa permulaan (0 hari) dan akhir eksperimen (selepas 6 minggu). Kepekatan sperma per ml, jumlah kiraan sperma dan isipadu milt untuk setiap rawatan dibandingkan. Keputusan kajian menunjukkan terdapat peningkatan kepekatan sperma per ml dalam Rawatan A daripada $1.282 \pm 0.422 \times 10^{10}$ kepada $1.359 \pm 0.420 \times 10^{10}$ manakala bagi Rawatan B terdapat penurunan kepekatan sperma per ml daripada $8.958 \pm 3.424 \times 10^9$ kepada $7.047 \pm 2.370 \times 10^9$. Analisis statistik menunjukkan tiada perbezaan yang ketara dalam kepekatan sperma dalam kedua-dua rawatan. Isipadu milt bagi setiap induk di awal eksperimen bagi kedua-dua rawatan juga menunjukkan tiada perbezaan yang ketara iaitu 4.305 ± 2.493 ml dan 4.532 ± 3.261 ml masing-masing bagi Rawatan A dan B. Rawatan B menunjukkan isipadu milt yang lebih tinggi selepas 6 minggu iaitu 3.870 ± 3.305 ml berbanding Rawatan A iaitu 2.643 ± 2.609 ml. Semasa awal eksperimen, purata jumlah sperma setiap induk ialah $5.377 \pm 2.811 \times 10^{10}$ dan $4.186 \pm 2.889 \times 10^{10}$ masing-masing bagi Rawatan A dan Rawatan B. Selepas 6 minggu, purata jumlah sperma dalam rawatan A lebih tinggi ($3.433 \pm 2.883 \times 10^{10}$) berbanding Rawatan B ($2.246 \pm 1.534 \times 10^{10}$). Sebagai kesimpulannya, pellet makanan tambahan minyak ikan tidak memberi kesan kepada kualiti sperma ikan keli berkemungkinan disebabkan kepekatan minyak ikan yang digunakan adalah tidak optimum. Peningkatan kepekatan minyak ikan berkemungkinan dapat memberi kesan yang ketara kepada kualiti sperma. Kajian lanjut perlu dilakukan bagi melihat aspek ini. Tambahan lagi, stres mungkin menjadi salah satu faktor yang mengurangkan kualiti sperma induk ikan semasa penternakan.