OPTIMIZATION OF ULTRAVIOLET IRRADIATION ON EGGS OF AFRICAN CATFISH, *Clarias gariepinus* FOR ANDROGENESIS

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ABSTRACT

This study was about the Ultraviolet optimization based on four distances and five durations to induce androgenesis which produce all male larvae in African catfish, *Clarias gariepinus*. There are two main aspects that important to produce androgenetic larvae which is UV exposure to eggs and cold shock to restore diploidy. The cold shock was applied is 5°C for 20 minute. The optimum UV distance and duration was 20 cm and 1 min since this treatment has a high number of hatching rate and survival rate compared to others. In addition, the chromosome number obtained in optimum of UV distance and duration exposure to eggs was diploid (2n). Fertilization rate has been recorded after the fertilization of irradiated eggs with sperm and fertilization of normal eggs with sperm (control). About 24 hour after the fertilization, the hatching rate has been determined. The hatched larvae were reared for 10 days. During the larvae rearing, the larvae fed with *Artemia nauplii* thrice daily and the water quality was maintained and monitored daily by changing the water in incubation tank every day. The survival rate also was recorded every two days during the larvae rearing. Hatching rate and survival rate obtained on last day of larvae rearing are 13.4 % and 36.0% respectively. There were a significant difference in all treatment groups and control ($p<0.05$). Karyotyping was done after 10 days of larvae rearing and counting the number of chromosome was done by using Karyotyping Software. Chromosome number found are 2n or diploid and 3n or triploid. Normally, diploid obtained was 2n=56 which specific for *C. gariepinus*. This present study found that the highest duration will show the lowest hatching rate and survival rate while the highest distance will show the highest hatching rate and survival rate.

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PENGOPTIMUMAN SINARAN ULTRAUNGU PADA TELUR IKAN KELI AFRIKA, *Clarias gariepinus* UNTUK ANDROGENESIS

ABSTRAK

Kajian ini adalah tentang pengoptimuman Ultraungu berdasarkan empat jarak dan lima jangka masa untuk mendorong androgenesis yang menghasilkan semua larva lelaki dalam ikan keli Afrika, *Clarias gariepinus*. Terdapat dua aspek utama yang penting untuk menghasilkan larva androgenetik iaitu pendedahan UV untuk telur dan kejutan sejuk untuk memulihkan diploidy. Kejutan sejuk yang telah digunakan ialah 5°C selama 20 minit. Jarak UV optimum dan tempoh adalah 20 cm dan 1 min kerana rawatan ini mempunyai beberapa kadar penetasan dan kadar hidup yang tinggi berbanding dengan rawatan lain. Di samping itu, bilangan kromosom yang diperolehi optimum jarak UV dan pendedahan tempoh kepada telur adalah diploid (2n). Kadar persenyawaan telah direkodkan selepas persenyawaan telur radiasi dengan sperma dan persenyawaan telur biasa dengan sperma (kawalan). Kira-kira 24 jam selepas persenyawaan, kadar penetasan telah ditentukan. Larva yang menetas telah diternak selama 10 hari. Dalam penternakan larva, larva di beri makan *Artemia nauplii* tiga kali setiap hari dan kualiti air dikekalkan dan dipantau setiap hari dengan menukar air di dalam tangki pengeraman setiap hari. Kadar survival juga dicatatkan setiap dua hari semasa ternakan larva. Kadar penetasan dan kadar kelangsungan hidup yang diperolehi pada hari terakhir ternakan larva adalah 13.4% dan 36.0% masing-masing. Terdapat perbezaan yang ketara dalam semua kumpulan rawatan dan kawalan ($p < 0.05$). Karyotyping telah dilakukan selepas 10 hari ternakan larva dan mengira bilangan kromosom telah dilakukan dengan menggunakan Perisian Karyotyping. Bilangan kromosom yang didapati adalah 2n atau diploid dan 3n atau triploid. Biasanya, diploid diperolehi adalah 2n = 56 yang khusus untuk *C. gariepinus*. Kajian ini mendapati bahawa tempoh tertinggi akan menunjukkan kadar penetasan yang terendah dan kadar kelangsungan hidup manakala jarak tertinggi akan menunjukkan penetasan kadar tertinggi dan kadar kelangsungan hidup.