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## Photoperiod Effect in Embryonic Development of Queen Conch, *Strombus gigas* (Linnaeus)

LUIS A. RODRÍGUEZ GIL, ROBERTO ZAMORA BUSTILLOS,  
JORGE TELLO CETINA, and YIGALL RODRÍGUEZ ROMERO

*Instituto Tecnológico de Mérida*  
*Km. 5 Carretera Mérida a Progreso*  
*Mérida, Yucatán, México*

This scientific investigation is focused in the finding of basic biological mechanisms involved in the culture of *Strombus gigas* and the objective was to determine the direct effect of photoperiods during embryonic development until final evaluation: hatching. Seven egg masses of the queen conch, *Strombus gigas* still in their first cell divisions, were subjected to six different photoperiod treatments in two phases. The first phase used 3 egg masses and had a 5 hour advanced photoperiod and the second used 4 egg masses with a 7 hour advanced photoperiod. The photoperiods were advanced with respect to 18:00 hours (the normal time of sunset at the collection areas in Mexico). The experiment apparatus consisted of 6 wooden boxes, each containing five receptacles in which portions of each egg masses were placed. Seawater flow was 200 ml/min at a controlled temperature of  $27.8 \pm 0.2$  °C. The number of larvae that hatched were counted in all treatments in intervals of one hour, from the beginning of eclosion in whichever treatment took the longest to complete hatching, with the objective of observing if embryos responded to the different photoperiods. The results indicated that eclosion depended on the alternation of light/dark, such that light could be programmed to advance up to 7 hours and that 3 cycles of artificial light/dark were enough to show enough endogenous control suggesting that this sequence can be compared to a biological clock regulated by photoperiod.

KEY WORDS: Mariculture, embryonic development, photoperiod

### Efecto del Fotoperíodo en el Desarrollo Embrionario del Caracol Reina *Strombus gigas* (Linnaeus)

Esta investigación científica está enfocada en encontrar mecanismos biológicos básicos involucrados en el cultivo de *Strombus gigas* y el objetivo fue la determinación del efecto directo del fotoperíodo durante el desarrollo embrionario hasta el final de la eclosión. Siete puestas de masas de huevos del caracol reina, *Strombus gigas* en sus primeras divisiones, fueron sometidas a seis tratamientos de fotoperíodo en dos etapas. En la primera etapa se usaron tres puestas de masas con 5 horas de adelantamiento de fotoperíodo y en la segunda etapa se usaron cuatro puestas de masas con 7 horas de adelantamiento. Ambos fotoperíodos de adelantamiento se efectuaron tomando en cuenta como referencia el tiempo de 18:00 horas que es cuando normalmente ocurre la eclosión en condiciones naturales al iniciarse la penumbra en el sitio de

trabajo. El aparato experimental consistió de seis cajas de madera en la cual cada caja contenía seis botes de plástico en las cuales las porciones iguales de cada puesta de masa de huevos fueron colocadas, El flujo de agua de mar fue de 200 ml/min a una temperatura de  $27.8 \pm 0.2$  °C. El número de larvas que eclosionaron fueron contadas en todos los tratamientos en intervalos de una hora, desde el comienzo de la eclosión en cualquiera de los tratamientos hasta que finalizó la eclosión con, el proposito de observar si los embriones respondieron a los diferentes tratamientos de fotoperíodo. Los resultados indican que la eclosión depende de la alternancia de luz/obscuridad, tal que el fotoperíodo puede ser programado por adelantado hasta 7 horas y que 3 ciclos artificiales de luz/obscuridad fueron bastante suficientes para mostrar un control endógeno, sugiriendo que esta secuencia puede ser comparada a un reloj biológico regulado por fotoperíodo.

PALABRAS CLAVES: *Strombus gigas*, fotoperíodo, desarrollo embrionario, maricultura

### **Fatty Acid Profile and Lipid Composition Related to Spawning Cycle of Queen Conch *Strombus gigas* (Linnaeus), from the National Park Arrecife Alacranes, Yucatan, Mexico**

LUIS A. RODRÍGUEZ GIL<sup>1</sup>, SANTOS AKE CANUL<sup>2</sup>, ROBERTO ZAMORA BUSTILLOS<sup>3</sup>,  
and YIGALL RODRÍGUEZ ROMERO<sup>1</sup>

<sup>1</sup>Instituto Tecnológico de Mérida  
Km. 5 Carretera Mérida a Progreso  
Mérida, Yucatán, México  
luisrdzil@aol.com

<sup>2</sup>UADY. Facultad de Química

<sup>3</sup>CINVESTAV-Unidad-Mérida

Although fishing regulation may help to recuperate populations of queen conch, other strong alternative that should be considered is mariculture. Studies on the lipid composition and fatty acid profile may help to a better understanding to culture queen conch. Thus, the objective of this work was to determine the lipid composition and fatty acid profile of the Queen conch *Strombus gigas* (Linnaeus) related to their spawning cycle. The experiment was carried out for two years (2002-2003). Sampling was performed in different organs before, during and after spawning in the protected area of Arrecife Alacranes. Extraction and determination of lipids was performed according the methodology of Privett *et al.* We found the highest percentage for phosolipids regardless the organ from which the samples were taken. Fatty acids profile was determined and related with the number of lays. We found that saturated fatty acids decreased and the unsaturated fatty acids increased as the number of lays increased. In conclusion, we found that the highest quantity of saturated fatty acids before and after spawning. During spawning the saturated fatty acid