Influence of different dietary fat/protein sources on production traits of mosquito fish *Gambusia affinis*

Fatma F. El TUMI, Najla A. ELFAKIH
Marine Biology Research Center Benghazi, p.o. Box 9480, Benghazi, Libya, (e-mail: eltomi_mbrc@yahoo.com)

Abstract
During the last two decades, more attention has been paid to the level of different nutrients in broodstock diets. However, studies on broodstock nutrition are limited and relatively expensive to conduct. Thus, fish nutrition has advanced dramatically in recent years with the development of new, balanced commercial diets that promote optimal fish growth and health. An improvement in fish nutrition and feeding has been shown to greatly improve not only egg and sperm quality but also seed production. Many fish species were optimized to investigate the effect of different diets on growth, reproduction and other traits, among these species mosquitofish *Gambusia sp*. The mosquitofish *Gambusia affinis* is an important alternative to pesticides, which cause environmental problems. It is remarkably successful in controlling mosquitoes it has been as mean malaria control. This species, which survives and reproduces easily, is resistant to poor environmental conditions. However, in spite of the species widespread use is little known about its reproductive potential. The present study aimed to investigate the effect of different dietary fat and protein sources on reproduction performance and growth of adult mosquitofish, the experimental period continued for 2 months, where, about 552 adult mosquitofish *Gambusia affinis* collected from Ain Majdob Lake which located East of Benghazi, Libya. After their adaptation to the lab condition, the fishes were randomly stocked in containers; the containers were divided to four groups at density of about 40 - 43 fish per each container. The feeding experiment based on use of different commercial diets; group (A) fed on fishmeal based diet, group (B) fed on soybean based diet, group (C) fed on mixed diets of A and B in addition to extra amount of vitamins and minerals and group (D) fed on brine shrimp *Artemia salina* nauplii and treated as a control group. after 3 weeks of experiment, confirmed whith reproductive season of this species; the graved females selected from each group; were propagated to produce the larvae, the larvae were collected and randomly distributed into containers. The use of different diets as a food source for larvae of mosquitofish *Gambusia affinis* was investigated. The larvae were fed on: (a) capsulated *Artemia* cysts, (b) decapsulated *Artemia* cysts, (c) metanauplii of *Artemia*, and (d) an artificial diets. The results of the feeding experiment for adults fish showed that feshes that fed on fishmeal diet was significantly gave good growth rate comparable with fishes that fed on soybean meal diet, but the best growth rate was appears in fishes that fed on mixed diets of fishmeal and soybean meal in addition to extra amount of vitamins and minerals, as well as the results of reproductive performance showed that all fish groups can be produced most of embryo stages, Thus the diets were affected on growth rate more than their effect on reproductive performance. After a 30-day rearing period, the results of the feeding experiment for mosquitofish larvae showed that; the highest growth rate was obtained with the larvae receiving capsulated *Artemia* cysts. At the end of the experiment, feeding of the larvae with an artificial diet and metanauplii yielded significantly lower growth rate compared to the other groups, yet the group of capsulated cysts resulted in a significantly lower survival rate. Feeding on decapsulated *Artemia* cysts showed a significant unstable growth rate compared to capsulated cyststreated groups.

Key words: sperm, shrimp, mosquito fish, artemia

sa2011_a0618