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Eco-Biological Study of Artemia salina (Branchiopoda, Anostraca) in Sahline Salt Lake, Tunisia

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Abstract : In this study, we examined in the first part the eco-biology of Artemia (A.salina) collected from Sahline Salt Lake (governorate of Monastir: Tunisia) during an annual cycle. The correlations between environmental factors and some biological parameters of Artemia were determined. The results obtained showed that the environmental factors affected the biology of Artemia. The highest abundance was recorded in May (550 ± 2,16 ind/l) and all life history stages existed with different seasonal proportions. The Artemia population is bisexual with ovoviviparous reproduction at the beginning and oviparous at the end of the life cycle. We also recorded the dominance of males at the start and the females at the end of the cycle. During all the study period, the size of mature females is bigger than that of males. The fertility obtained resulted in a significant production of cysts compared to the nauplii. A negative correlation with highly significant effect was deduced between environmental factors (temperature and salinity) and the production of nauplii (ovoviviparity) in contrast with dissolved oxygen. In the second part of our work is consecrated to the mastery of breeding Artemia. For this, we tested the effect of five external factors (temperature, salinity, dissolved oxygen, light intensity and food) on the survival of this crustacean. Thereby, the survival rates of Artemia were affected by the different values of studied factors. The recorded results showed that Artemia salina has an optimum temperature ranged from 25 to 27°C with a survival rate ranging from 84 to 88%. The optimal salinity to breed Artemia salina was 37 psu (62 ± 0,23%). Nevertheless, this crustacean was able to survive and withstand the salinity of 0 psu (freshwater). The optimum concentration of dissolved oxygen was 7mg/l with a survival rate of 87,11 ± 0,04%. An optimum light intensity of 10 lux revealed a survival rate equal to 85,33 ± 0,01%. The results also showed that the preferred micro-algae by Artemia is Dunaliella salina with a maximum survival rate of the order of 80 ± 0,15%. There is a significant effect for all experienced parameters on the survival of Artemia reared except the nature of food.

Keywords : Artemia salina, biology, breeding, ecology, Sahline salt lake
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