



Biometrical, morphological and biochemical characterization of three *Artemia* (Crustacea: Anostraca) populations from South India

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Abstract

The aim of the present study is to enumerate variations in terms of size, growth, morphology and biochemistry among South Indian *Artemia* populations namely Puthalam, Thamarakulam and Tuticorin. Cyst biometrics and hatching performances of the three *Artemia* populations were studied to enumerate the possible differentiation among them. A detailed post-embryonic development from cysts to adults, and morphological study with adults of two parthenogenetic (Puthalam, Thamarakulam) and one bisexual (Tuticorin) populations of the brine shrimp *Artemia* was performed. Multivariate Discriminant Analysis was carried out to separate and/or group together populations which exhibit great similarities. The quantitative estimation of the biochemical constituents such as protein, lipid and sugars, of the populations were studied following standard procedures. Biometrical and hatching characteristics revealed distinct variation among the three populations which could be taken as a tool to discriminate the populations. Post embryonic development was observed to complete by 13

stages in Tuticorin population, 17 stages in Puthalam population and Thamarakulam population, showing morphological and functional changes. Morphometric analysis showed that *Artemia* population from Tuticorin is morphologically divergent whilst the other two parthenogenetic populations partially overlap each other. The three populations of *Artemia* remain separated by the Discriminant Function, which has the total length, number of setae in a furca, eye diameter, head width and length of the furca as the morphological characteristics contributing most to the observed differences and contributing to the separation of parthenogenetic and the bisexual populations. Significant variations were observed in the relative concentrations of total proteins, total lipids, free cholesterol, glycoproteins and total free sugars among the populations with the Tuticorin population having higher concentration of all the biochemical constituents. This multi-trait approach for *Artemia* characterization is stressed as a way to obtain better descriptions and interpretations of the biological diversity in the genus.

Key Words: Biometry, post-embryonic development, morphometry, Discriminant Analysis, biochemical characterization

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