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Reproductive characteristics and Cyst production of Phallocryptusspinosa in the laboratory conditions

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ABSTRACT: Success in aquaculture is based on various criteria and the selection of a suitable feed and its potential use is important. The possibility of using fairy shrimps as diet in aquaculture has not been explored widely. Among the live diets used in the aquaculture, fairy shrimps have the potential to be used as a feed item for fishes such as ornamental fishes that benefit from live food. Also, their cysts and nauplii are useful in larval culture, mainly due to their convenience and availability. Phallocryptusspinosa belong to the anostracans, is a common inhabitant in seasonal water catchments in Northwest of Iran. In this study reproductive characteristics and cyst production of Phallocryptusspinosa studied at different temperatures in the lab. Twenty replicates of 20 pairs of adult Anostraca (20 female and 20 male) were treated in temperature of 15, 20, 25 and 30℃. The Anostracans were fed with unicellular algae Dunaliellatertiolecta and Lansy PZ. Anostracans never reached to reproductive at 15 and 30℃. Also we observed higher cyst production at 20℃, compared to that at 25℃ ($P < 0.05$).
Keywords: Anostraca, Fairy shrimp,Phallocryptusspinosa, Cyst, Reproductive

INTRODUCTION

Anostracans, commonly known as fairy shrimps are typical inhabitants of vernal pools, aquatic environments characterized by strongly variable abiotic conditions (Beladjalet al., 2003a). Like other crustacean species that inhabit vernal pools, the fairy shrimp are adapted to the unpredictable nature of the ponds by developing to maturity quickly and reproducing before the drying ponds. Females produce encysted embryos that remain quiescent until the pools refill, the embryos then hatch when exposed to the appropriate environmental cues (Brendoncket al., 1990). Many fairy shrimp species havespecific habitat requirements for parameters such as temperature and pH (Eriksen& Belk, 1999). Several researchers have studied the population dynamics of fairy shrimps under varying environmental conditions (Ali &Brendonck, 1995; Ali & Dumont, 1995; Mura &Dowgiallo, 1996; Mura, 1997; Hulsmanset al., 2006). Although much information is available on the ecology of anostracans (Gaudin, 1960; Prophet, 1963; Lake, 1969; Bernic, 1972a, b; Dimentman, 1979; Sluzhevskaya, 1975, 1982; Anderson & Hsu, 1990; Saiah& Perrin, 1990; Maeda Martinez et al., 1995), relatively little is known about how populatios differ in life history patterns (Beladjalet al., 2007). A number of studies have been carried out on reproductive and life span characteristics of Anostracapopulations from different parts of the world cultured under standardized laboratory conditions (Lake, 1969; Daborn, 1977; Holtzet al., 2001; Beladjalet al., 2003a, b; Atashbaret al., 2012). However, more research is required to understand dynamics and life history characteristics in other species.

Phallocryptusspinosa Milne Edwards 1840 was reported from pools at the vicinity of the Urmia Lake (Brehm, 1954; Mura &Takami, 2000). These pools are scattered at the periphery of the lake in both West and East Azerbaijan. The size of the pools varies from a few square meters to maximum 2000 m^2 surface area and their depth is always less than 1 m. Therefore these pools are considered as temporary small water catchments that are dried during early summer and filled up again during winter rains. Water salinity in the pools begins from 0-5 g/l and gradually rises to saturation level. P. spinosa in these lagoons grow to maturity at very low salinities and start reproduction before the pools dry up.

The life cycle of P. spinosa has not been documented neither Iran nor anywhere else in the world. This paper reports on a study on reproductive characteristics and cyst production of P. spinosa from Iran. The main aim of this