Growth and survival of the tropical sea urchin, Salmacis sphaeroides fed with different macroalgae in captive rearing condition

ABSTRACT

An experiment was undertaken to develop appropriate culture techniques for high-valued tropical sea urchin, Salmacis sphaeroides under captive aqua-rearing conditions. Three-month-old juveniles produced through induced breeding, larval rearing and metamorphic induction were stocked with 20 juveniles in each of nine well-aerated glass aquaria (46 x 30 x 30 cm).? Juveniles fed with red alga (Amphiroa fragilissima) were designated as Treatment-1 (T1), brown alga (Sargassum polysystum) as Treatment-2 (T(2)) and sea grass (Enhalus acoroides) as Treatment-3 (T(3)). At the time of stocking, juveniles were under the same age group and batch-reared with a mean length and weight of 9.98 ? 0.56 mm and 0.49 ? 0.11 g, respectively. The juveniles were fed ad libitum, and the seawater in each rearing aquarium was changed at bi-monthly intervals. The culture was carried out for one year during which time the juveniles attained sexual maturity. Growth performances (viz., final weight, weight gain, final length, length gain, specific growth rate and daily growth rate) and survival of adults were significantly higher ($P < 0.05$) in T(1) than those in T(2) and T(3), respectively. Gonad production, in terms of wet gonad weight and gonad index, also followed the same trend as that for growth. Hence, of the three algal feed evaluated, red alga appeared to be the most suitable food for rearing of S. sphaeroides under captive conditions. The present study is the first demonstration of successful culturing of S. sphaeroides in a static aquarium system, the findings of which could be helpful towards the commercial sea urchin aquaculture.

Keyword: Growth; Macroalgae; Production; Sea urchin aquaculture; Salmacis sphaeroides; Survival