Influence of salinity variations on the embryonic and early larval development of long-spined black sea urchin (Diadema Setosum)

ABSTRACT

Effects of salinity on fertilization, embryonic, and early larval development and growth performances of long-spined black sea urchin (Diademasetosum) were investigated in a controlled laboratory condition. The experiment was carried out with seven salinity treatments (22, 25, 28, 31, 34, 37 and 40ppt), each of which was triplicated. Significantly highest fertilization success was achieved at 31 ppt (97.33%), followed by those at 34, 37, 28, 25 and 40 ppt, and the lowest value at 22 ppt, decreased with increasing and decreasing salinities ($P< 0.05$).The time required to reach these embryonic and larval stages was increased with the salinity deviations from 31 followed by 34, 37 and 28 ppt. Survival (%) of the early larval stages (from prism to 4-arm pluteus) followed the same trends as fertilization rates. No significant differences ($P> 0.05$) were recognized among these four salinity levels on prism larval length and width. However, significant differences ($P> 0.05$) were noted in morphometric characteristics of 2-arm and 4-arm pluteus larvae. The finding of the study indicated that D.setosum is a stenohaline echinoid that could not be able to survive and develop if the salinity range is less than28 or more than 37 ppt.

Keyword: Sea urchin; Diademasetosum; Salinity; Embryo; Larvae; Development