

**GROWTH, DEVELOPMENT, SURVIVAL AND SETTLEMENT  
RATE OF SANDFISH (*Holothuria scabra*) LARVAE REARED  
USING DIFFERENT MICROALGAE AND SETTLEMENT CUES**

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## ABSTRACT

Growth, development and survival of *Holothuria scabra* larvae fed with different microalgae were studied. In the first experiment, *Chaetoceros calcitrans*, *Rhodomonas* sp. and *Tetraselmis tetrathele* at 10000, 20000, 30000 and 40000 cells ml<sup>-1</sup> were compared. Larvae fed with *Rhodomonas* sp. at 10000 cells ml<sup>-1</sup> had the highest mean body length (BL) at late auricularia (1032.41±38.70 µm). However, those fed with *C. calcitrans* at 20000 cells ml<sup>-1</sup> showed higher daily growth rate (DGR) of 31.4±5.2 µm d<sup>-1</sup>. Development to 50% competent larvae was shorter using *C. calcitrans* at 20000 and 30000 cells ml<sup>-1</sup>. At 12 days post-fertilization (DPF), larvae fed with *C. calcitrans* at 20000 and 40000 cells ml<sup>-1</sup> showed significantly higher % doliolaria (p<0.05) and those fed at 20000 cells ml<sup>-1</sup> showed highest survival of 53% at 14 DPF. In the second experiment, three combinations of microalgae containing 10000 cells ml<sup>-1</sup> of each microalga were used: *C. calcitrans* and *Rhodomonas* sp., *C. calcitrans* and *T. tetrathele*, and *Rhodomonas* sp. and *T. tetrathele*. Larvae fed with mixed *C. calcitrans* and *Rhodomonas* sp. showed significantly higher mean BL at late auricularia (991.0±15.8 µm) and DGR (43.8±9.9 µm d<sup>-1</sup>) (p<0.05). Larvae showed faster development and higher survival of 86% at 10 DPF. In summary, *C. calcitrans* at 20000 cells ml<sup>-1</sup> is recommended as a single diet while a combination of *C. calcitrans* and *Rhodomonas* sp. as a mixed diet.

Settlement of *H. scabra* on substrates with different cues was also investigated using corrugated plastic sheets (CPS) as substrate and *Navicula*, *C. calcitrans* paste and *Spirulina* paste as cues. CPS without cue served as control. Although no significant differences, *Spirulina* paste showed highest settlement rate (88.54%) followed by *Navicula* and *C. calcitrans* paste. Control showed significantly lowest settlement rate. Therefore, *Spirulina* paste best induced settlement of *H. scabra*. However, *Navicula* and *C. calcitrans* paste may be used as cheaper settlement cue substitutes.

**Keywords:** *Holothuria scabra*, auricularia, microalgae, development, settlement cues