

Phytoplankton uptake and growth rate in the Japanese egg cockle *Fulvia mutica*

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To clarify the relationship between the quantity of food ingested by and the growth rate of the Japanese egg cockle *Fulvia mutica* (Reeve), we conducted a laboratory breeding experiment for 2 weeks and estimated the chlorophyll a (chl-a) concentrations in water and the increments in shell length and soft-body weight of this species under five chl-a concentrations. Moreover, we compared the relationship between cockle growth (changes in soft-body weight and shell length) and their feeding environment observed in the laboratory experiment with the results of a field investigation conducted at two sites in the Sea of Japan, Kumihama Bay (35°38'5" N, 134°54'00" E) and Kunda Bay (35°33'30" N, 135°15'4" E). The changes in softbody weight were similar in both laboratory and field investigations, but those in shell length were not. We, therefore, considered shell length changes as unsuitable for evaluating the relationship between growth and feeding in *F. mutica*. Based on the changes in soft-body weight, it was possible to classify the feeding environment of this species into the following three types: (1) ≤ 1.52 lg chl-a L⁻¹, negative feeding environment for cockle growth; (2) 1.52–5.71 lg chl-a L⁻¹, neutral feeding environment for cockle growth; (3) > 5.71 lg chl-a L⁻¹, positive feeding environment for cockle growth (growth increased with increasing chl-a concentration up to about 11 lg chl-a L⁻¹). These results indicate that maintaining chl-a concentration in the breeding water within 5.71–11 lg chl-a L⁻¹ is desirable for rearing Japanese egg cockle.

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