

Culture of the soft coral, *Lobophytum pauciflorum* (Family: Alcyoniidae) under captive conditions at Kochi, India

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India is bestowed with rich marine biodiversity with coral reefs accounting for a substantial share. Coral reefs make up less than 2% of the world's oceanic habitats, yet they comprise about 25% of known marine biodiversity. Among corals, soft corals are of interest to several researchers as some of the highly useful bioactive compounds are being isolated from them. Many of the coral reef ecosystems have now been noticed to be under threat due to over-exploitation, pollution and climate change. Hence there is an urgent need to conserve the corals and related bioresources. Development of suitable culture practices for transplantation of corals in the wild has been considered as one of the options for replenishing the damaged soft coral communities. Culture of soft corals is being practised in many parts of the world, mainly for aquarium trade and for the extraction of useful compounds. In many countries, there are restrictions to collect soft coral specimens from the wild due to uncontrolled anthropogenic activities. Also, there is an increasing global awareness in recent years on the over-exploitation of coral reef resources throughout the tropics and this attitude created a market for cultured reef animals while offering an economically viable alternative to wild specimen collection. The genus, *Lobophytum* is one of the hardy and frequently cultured species among the soft corals. *Lobophytum pauciflorum* (Ehrenberg, 1834) is widely distributed in the Indo-west Pacific region and in the Andaman and Lakshadweep Islands. In India, the genus *Lobophytum* has been studied for isolation of bioactive compounds, as well as chemical composition. However, so far there is no report available on the culture of soft corals in India. Hence, an attempt was made to study the different aspects of culture of *Lobophytum pauciflorum* in captivity.

Colony of *L. pauciflorum* was collected by snorkeling from the reef areas of the Palk Bay and brought alive to the marine hatchery of the Central Marine Fisheries Research Institute (CMFRI), at Cochin (Fig. 1).



Fig.1. Colony of *Lobophytum pauciflorum* (Ehrenberg, 1834)

The live colonies were acclimatised to the hatchery conditions in aquarium tanks holding seawater at 34 ppt salinity, for about 2 weeks. The colonies were then cut into fragments of about 6 cm length and immediately placed in the experimental tanks. Each tank was provided with one fragment, placed on dead coral stone or dry oyster shell. The experiment was conducted in a set of nine tanks (Fig. 2)



Fig. 2. Experimental set-up for soft coral culture

The experimental tanks with 125 l of seawater in each were arranged on a platform. The tanks were provided with sand bed, canister filter, aeration and 10 light hours per day, uniformly. Feeding trials were carried out using *Nannochloropsis oculata* and a liquid food available in the market (*Rainbow*, seawater series, Golden Rainbow Aquarium Co., Ltd.) for invertebrates. The whole experiment on feeding was carried out in triplicate. Feeding schedule included supply of 1 ml of invertebrate feed and 250 ml of 8-9 million cells ml⁻¹ of *N. oculata* twice a week to the respective tanks. (invertebrate feed in tanks 2A, 2B, 2C and *N. oculata* in tanks 3A, 3B & 3C). No feeding was done in the control tanks (1A, 1B and 1C). About 20% water exchange was done once a week.

Water quality parameters such as temperature and pH were recorded daily and average values were calculated with respect to each set. During the experiment, the salinity was maintained at 34±1 ppt., pH at 8±0.2 and temperature between 24.5 and 29.5 °C. The experiment was conducted for a period of 3 months.

In the experimental tanks, the fragments were found attached firmly to the substratum by about two weeks of fragmentation and new polyps were clearly visible on the cut portion by the 25th day, in both the treatments and the control. The growth on the cut portion of the fragments at the end of three months when fed with the invertebrate feed, with *N. oculata* and in control along with their respective freshly cut fragments (initial) are shown in Fig. 3, 4 and 5 respectively. In the treatment tanks, where invertebrate feed was used, a maximum of 7 mm growth was attained on the cut portion of the fragment by the end of 3rd month.

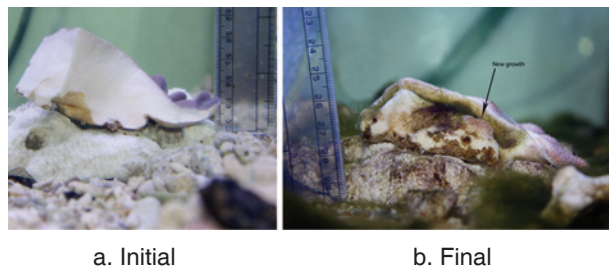
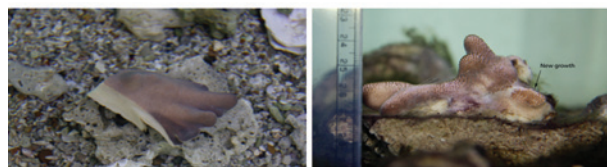


Fig. 3. Growth on the fragment of *L. pauciflorum* fed with invertebrate feed

In the treatment in which feeding was done with *N. oculata*, growth on the cut portion was gradual reaching a maximum of 7 mm by the end of 3rd month.

In the fragments of *L. pauciflorum* in the control tanks, though the growth was gradual, a maximum of 8 mm was recorded on the cut surface at the end of 3rd month.

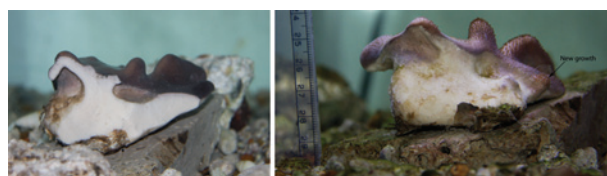
In all the three sets of experiments, apart from the growth on the cut portion of the fragments, visible growth was also observed on other parts of the fragments as evident from Fig. 3, 4 and 5. The growth recorded on the cut portion of the fragments in all the 3 sets of treatments was almost the same, indicating that the feeds given had no impact on the growth. It is not clear whether the dosage of feed had been too low to show any visible change. Hence, it is necessary to conduct further experimental studies to arrive at definite conclusions. As this is a pioneering work, this can be treated as a baseline



a. Initial

b. Final

Fig. 4. Growth on the fragment of *L. pauciflorum* fed with *N. oculata*



a. Initial

b. Final

Fig. 5. Growth on the fragment of *L. pauciflorum* in the control tank

information and further studies on soft coral cultivation can be attempted. The fact that soft coral fragments have successfully got attached to the substratum and shown growth of numerous polyps within a short span of one month under laboratory conditions points to the possibility of transplanting them in the wild as a first step towards conservative mariculture. This may ultimately lead to appropriate strategies for conservation and sustainable utilisation of the resource.