

Evaluating the Potential of Bivalve Scallop (*Bivalvia: Pectinidae: Scallop*) in Biofiltration of Wastewater in Shrimp Farms from Guowater Bay, Chabahar

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Abstract

In this study, the Scallop bivalves were used for biofiltration of wastewater in shrimp farms during spring 2018 from Guowater Bay. Sedimentation ponds, biological filtration and aeration systems were established for biofiltration around the main pool, then oyster bivalves were collected from natural environment (sea) and were placed in these pools. Concentration of quality parameters were investigated in four sampling stations including station 1 (sea water), station 2 (inlet water), station 3 (outlet waste) from main pond, and station 4 (water sampled before entering the sea). The results showed that the concentration of parameters were significantly higher in the outlet waste of main pond (station 3) than the other stations ($P < 0.05$). The results of the correlation test showed there was significant negative correlation between biofiltration ratio and quality parameters, so that concentrations of parameters were decreased with increasing in filtration rate. The concentration of nitrate, phosphate, turbidity, EC, TDS and dissolved oxygen were 0.67, 1.52, 22.36, 39.78, 20.21 and 9.49 mg/l in main pond, and 0.56, 0.79, 16.81, 38.68, 16.45 and 12 mg/l after biofiltration, respectively. The results showed that there were significant differences between parameters before and after biofiltration. There were significant differences in the biofiltration rate between the different time intervals ($P < 0.05$), so that the highest and lowest filtration rates were observed in the fifth and first day, respectively. The rate of 20, 48, 27, 22 and 2.5 % of nitrate, phosphate, turbidity, TDS and EC were removed from wastewater during biofiltration process. Therefore, the Scallop bivalve has a high ability for biofiltration of wastewater in shrimp farms that can be used as a good indicator for biofiltration of fish and shrimp farms.

Keywords: *Bivalve, Biofiltration, Shrimp Farms, Gouvatre Bay, Chabahar.*
