Aquaculture waste bioremediation by the seaweed *Chaetomorpha linum*: Ca, Cl, Na,K and pH measurements at the laboratory scale

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Aquaculture is growing worldwide and it is expected will more than double by 2050. However, aquaculture wastewater constitutes a serious environmental hazard in marine environment since it can affect changes in the physical-chemical characteristics of seawater, such as the reduction of dissolved oxygen and excess concentrations of nutrients, in turn causing alterations in both animal and plant communities. In this framework, in the present study the seaweed *Chaetmomorpha linum* was employed as biormendiator in order to reduce the phosphorous and nitrogen load due to aquaculture activity on account of our previous studies. The choice of algae to be utilized in aquaculture wastewater bioremediation requires careful discrimination since efficiency in nutrient removal may significantly change depending on the algal species In particular, here the concentration of Ca, Cl, Na,K and pH values were monitored in the waste collected in a maricolture plant (Maricoltura Mar Grande) located in the Mar Grande of Taranto (Inonian Sea) where of green seaweed Chaetomorpha linum was added in the laboratoryunderc ontrolled conditions (ore luc eore buio, Temparatura). The vaule of pH in the waste varied from 7.9 to 8.9 by the action of C. linum leading to suggest that the algal species by the photosynthetic activity sequesters CO2 leading to an increase of pH . Na, Cl, and k concentration were reduced at about two/three folds within the first 24 h by the action of C. linum on account of their employment in algal photosynthesis and osmosis. From the obtained results the ability of this seaweed to increase the concentration of calcium was also highlighted with a peak after 7 days. These results are noteworthy suggesting that the addition of C. linum in an aquaculture scenario could play several ecosystem services such as 1) the increase of seawater calcium concentration useful for other marine organisms for the construction of their shells and calcareous structures, 2) reduction of CO2 and consequently potential remediation of the recent marine environment acidification.