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Orientation: Ocean Observation and Global Change/
 Sustainable Use of Marine Resources

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 2.11 Biotechnology applied to aquaculture

PhD project: Influence of pH on the development of the clownfish *Amphiprion percula* and the seahorse *Hippocampus reidi* in recirculation systems with low salinity

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Summary: Aquaculture of ornamental fish species has economic and conservation importance. However, production of ornamental marine fish is not necessarily carried out on coastal or nearby areas. The use of water recirculating systems (RAS) using low salinity environments can be an interesting alternative to reduce the cost of production in sites located far from the coast. The operation of RAS in fish rearing can lead to water acidification due to the nitrifying process. The Thesis study the production of clownfish (*Amphiprion percula*) and seahorse (*Hippocampus reidi*) in RAS, evaluating the stress responses after acutely and chronically acidification in marine water (SW) and brackish water (BW). The acute responses of clownfish included high protein damage in fish exposed to pH 5. The most affected organs were gills and liver, showing a reduction in GST activity at pH 5-BW and high lipid damage (TBARS) in gills at pH 5-SW. The responses of clownfish to acidic conditions in BW were reduced growth rate, higher mortality, and higher damage in protein (P-SH) and lipid (TBARS). Regarding seahorses, important stress responses were observed after acute exposition to acidic environment at low salinity (pH 5-BW), triggering higher cortisol levels, and changes in enzyme activity (SOD, GST, GPx), and glutathione metabolism. Those effects were accompanied by reduced antioxidant capacity (TEAC), increased lipid peroxidation (TBARS), and moribund behavior. Similarly, the chronic exposure of seahorse juveniles to acidic condition in BW affected to biochemical responses, resulting in higher mortality and lower growth. However, the maintenance at acidic condition in SW enhanced growth and GSH levels. In conclusion the exposure of both species to acidic environments is detrimental in fishes exposed to low salinity water.

