Bioremediation of fish farm waste by deposit-feeding polychaetes *Capitella* sp. and *Hediste diversicolor*

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Integrated multi-trophic aquaculture systems (IMTA) combine species from different trophic levels to optimize nutrient recycling (Chopin et al. 2006). Studies have demonstrated the interest of adding deposit-feeders to improve sediment quality under floating fish cages (ex, Katz et al. 2002, Heilskov et al. 2006). The various sediment activities of deposit-feeders - feeding and bioturbation- enhance organic matter mineralisation and recycling and maintain toxic metabolites to sub-toxic levels. Our objective was to test effects of two deposit-feeder polychaetes, *Hediste diversicolor* and *Capitella* sp. on the bioremediation of seabass waste with potential application in recirculating multi-trophic aquaculture system (RAS-IMTA)

In 24 mesocosms (370 cm², 7 cm layer), *Hediste* (300 ind. m⁻² and *Capitella* (18000 ind. m⁻²) were raised individually or in mixture (HC). 2 types of sediment were tested (grain size F<0.5mm and S<0.8mm). Accumulated water nutrient concentrations were analysed.

In 40l mesocosms, fish waste assimilation by *Hediste diversicolor* was tested through stable isotope analysis. 2 types of feed were tested, feed1 (carp feed) and feed2 (seabass faeces and feed).

Discussion: The present study confirmed the interest of using polychaetes to reduce and valorize OM fish waste. Higher effect of *Hediste diversicolor* monoculture was explained by “Hediste density effect” (Ieno et al 2006). Assimilation of fish farm waste by *H. diversicolor* was confirmed through stable isotope analysis. As deposit-feeders enhance OM mineralisation, the nutrient-rich water could be used as fertilizer in a algal compartment in a RAS-IMTA system.