Effects of dietary Gracilaria sp. and Alaria sp. supplementation on growth performance, metabolic rates and health in meagre (Argyrosomus regius) subjected to pathogen infection

Effects of dietary seaweed supplementation on basal physiology and health biomarkers were assessed in meagre (Argyrosomus regius) subjected to bacterial infection, using Photobacterium damselae subsp. Piscicida (Phdp) as the etiologic agent. Three test diets were prepared by supplementing a basal control formulation (44 % protein, 16 % lipid, 22 kJ g⁻¹ energy) with 0 % seaweed (control), 5 % Gracilaria sp. or 5 % Alaria sp. During the growth trial, 180 fish (39.70 ± 0.33 g) were daily fed for 69 days with the experimental diets. After the growth trial, 60 fish from each dietary treatment were divided into two groups, infected and non-infected. The infected group was injected intraperitoneally with a saline solution (HBSS) with 2.91 x 10³ CFU Phdp g⁻¹ fish, whereas the non-infected group was injected with HBSS without Phdp. Dietary seaweed supplementation did not affect fish growth performance. Standard and routine metabolic rates, and aerobic metabolic scope did not vary significantly among dietary treatments. Conversely, maximum metabolic rate was significantly higher in fish fed Alaria sp. diet when compared to control group. Non-infected fish had higher hematocrit levels than the infected group, regardless of diet. Lactate levels were significantly higher in fish fed Alaria sp. diet when compared to control, with no interaction between diet and infection. Lipid peroxidation was significantly higher in fish fed control diet than supplemented diets. Infected groups had lower antioxidant enzymes activities when compared to non-infected. An interaction between infection and diet was found for glutathione peroxidase and reduced glutathione activities. The current study suggests that dietary seaweed supplementation modulates metabolic rates and biomarker responses in meagre, which may confer advantages in coping with biotic stressors.