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Using *Azolla filiculoides*, a candidate macrophyte species for ecological intensification, in small-scale aquaculture requires the investigation of the potential effects of fresh plant material not only on fish growth but also on physiological status and responses to disease and stress. In this study, juveniles of giant gourami *Osphronemus goramy* reared into cages placed in an outdoor pond were fed for six weeks with different proportions of fresh *Azolla* in replacement of commercial pellets (A: 100%, B: 56%, C: 26% and D: 0% of the feeding events). The condition factor (KFulton) somatic and immunological indicators were measured. Effects of *Azolla* on transport stress and bacterial infection with *Aeromonas hydrophila* were also assessed. Results showed that KFulton decreased with increasing proportions of *Azolla* in the diet ($p < 0.001$). Total protein, albumin and globulin in fish from treatment A were significantly lower than in the other treatments. A decrease in lymphocytes was observed in treatments A and B ($p < 0.001$) and fish from these treatments had higher levels of monocytes ($p < 0.001$). Neutrophils were higher in treatment A only ($p = 0.012$). Plasma lysozyme levels and serum bactericidal activity increased with *Azolla* in the diet (both $p < 0.001$). Before transport stress, glycaemia was lower in fish from treatment A ($p < 0.001$) while after transport, glycaemia increased in all treatments excepted treatment A ($p < 0.001$) where survival was the highest after 15 days post transport. One week after infection the survival of fish was higher in fish from treatments A and B ($p < 0.001$). *Azolla* had positive effects on immunological indicators, and resistance to stress and disease but decreased growth. These findings suggest using *Azolla* at reasonable rate (i.e. $< 30\%$ of the diet) to reduce pellets inputs while maintaining growth and providing other benefits to fish.

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