


Effects of dietary xylooligosaccharide on growth and feeding performance, body composition and physiological responses of sobaity seabream (*Sparidentex hasta*) juvenile

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Abstract

The aim of this study was to evaluate the effects of xylooligosaccharide (XOS) on growth performance, haemato-immunological responses, body composition and digestive enzymes activity of sobaity seabream juvenile (*Sparidentex hasta*) with an average weight of 35.64 ± 0.30 g. Fish were fed with experimental diet containing 0, 5 and 10 g XOS kg^{-1} for 8 weeks. The obtained results indicated that dietary XOS did not change sobaity seabream growth, feed utilization and body composition ($p > 0.05$). The results of this study indicated that different levels of prebiotic did not affect haemato-immunological parameters except for complement activity ($p < 0.05$). Digestive enzymes including lipase and amylase activity did not affected by XOS treatment but protease activity decreased significantly in fish fed 0.5% XOS compared to the control group ($p < 0.05$). Overall, results revealed that adding 0.5% XOS could be beneficial as an immunostimulant for general health status as well as an immune and stress resistance promoter. There were no significant effects through dietary XOS on other parameters measured in this study. Therefore, it is concluded that the levels of dietary XOS can differ according to the aim of use.

KEYWORDS

body composition, digestive enzymes, growth performance, humoral immunity, prebiotic, sobaity seabream (*Sparidentex hasta*)

1 | INTRODUCTION

Sobaity seabream (*Sparidentex hasta*, Valenciennes 1830) is a commercially valuable carnivorous fish species distributed in the Western Indian Ocean (W.I.O) and is known from the Persian Gulf and eastward to the coast of India. In 2013, an estimated 500 metric tons of silvery-black porgy was produced from farming activities in the region (FAO, 2016). This species was considered as a potential candidate species for coastal aquaculture diversification in the Persian Gulf and Oman Sea regions due to its readiness to spawn in captivity, rapid growth and tolerance to a relatively wide range of culture conditions (Pavlidis & Mylonas, 2011). In commercial

culture, fish are reared in intensive systems and exposed to stressful conditions and often increasing susceptibility to disease accompanied with mortalities resulting in serious economic losses (Hoseinifar, Dadar, & Ringø, 2017). The antibiotics appear to act by reducing pathogenic bacteria and modifying the microflora in the gut of the animal. However, dietary antibiotics lead to the presence of drug residues in edible animal products (Caballo, 2006). It has been demonstrated that several immunostimulants used in fish and shrimp effectively improve immune response, resistance, intestinal microbiota communities and growth performance (Wang, Sun, Liu, & Xue, 2017). Prebiotics are a group of these functional dietary supplements which beneficially affect the host by the selective