Dietary Supplemental Effect of Astaxanthin and ß-carotene on Growth, Coloration and Immune System of Red Snapper

(Lutjanus argentimaculatus Forsskal, 1775)

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Abstract

Study on the supplemental effect of astaxanthin and ß-carotene on growth, coloration and immune system of red snapper was conducted using pellet containing none of astaxanthin and ß-carotene, pellets containing astaxanthin at 0, 50, 100 and 150 mg/kg feed, and pellets containing ß-carotene at 0, 50, 100 and 150 mg/kg feed, and designated as the treatment no.1 (control), 2, 3, 4, 5, 6 and 7, respectively. Red snapper larvae at the initial body weight of 31.14 ± 0.03 g were reared at 15 pieces/tank for 8 weeks in 100 L fiberglass tanks. Results showed that no significantly different (P>0.05) in weight gain, survival rate and feed conversion ratio of the fish between treatments were found. But total skin carotenoid concentration of the fish fed on astaxanthin and ß-carotene supplemented pellets in all concentrations were significantly higher (P<0.05) than those of the control. Although the circulated immune responses in terms of plasma protein and superoxide anion of the fish between treatments were not statistically different (P>0.05), the lysozyme activities of the fish fed on ß-carotene supplemented pellets were statistically different (P<0.05) from that of the control, but were not significantly different (P>0.05) from those of the fish fed on astaxanthin supplemented pellets. Total red blood cell count and bacterial (Vibrio alginolyticus) eradicated efficiency of the fish fed on ß-carotene and astaxanthin supplemented pellets were not significantly different (P>0.05) but statistically significant (P<0.05) from that of the control. It may be concluded that supplement of astaxanthin at 100 mg/kg diet resulted in the skin coloration of red snapper, while supplementation of ß-carotene resulted in the increasing of the circulated immune response of the fish and supplementation of both ß-carotene and astaxanthin effected the total red blood cells and the eradicated efficiency against bacteria (V. alginolyticus).

Key words: astaxanthin, ß-carotene, coloration, immune system, red snapper

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