The effect of dietary natural Astaxanthin (*Haematococcus pluvialis*) on the growth parameters, carcases and liver chemical composition in juvenile beluga (*Huso huso* Linnaeus, 1758)

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Abstract

This study was conducted to assess the effects of dietary natural astaxanthin extracted from, *Haematococcus pluvialis* algaeon the growth performance, survival rate, carcases and liver composition of juvenile beluga (*Huso huso*). Beluga juveniles (35 g) were randomly allocated into 12 rectangular ponds (600 L) at a density of 15 fish per each pond and triplicate groups were fed either a basal control diet (0% astaxanthin) or the basal diet supplemented with astaxanthin (at 50, 100, 200 ppm). At the end of experiment (80 days), growth parameters such as weight gain (WG), feed conversion ratio (FCR), specific growth rate (SGR), protein efficiency ratio (PER), condition factor (CF), survival rate(SR), carcases and liver composition were determined. The results indicated that WG, SGR, PER and CF in fish fed supplemented astaxanthin were improved compared to the control treatment but these parameters showedsignificant difference ($P<0.05$). Survival rate in fish fed 100 and 200 ppm dietary astaxanthin were significantly higher than the other treatments. Carcases composition analysis showed no significant differences among the treatments. Liver ash had not significant differences between treatments. Liver moisture and protein in fish fed 50, 100 and 200 ppm dietary astaxanthin were significantly lower than control treatment. Liver fat in fish fed 50, 100 and 200 ppm dietary astaxanthin were significantly higher than the control.

Results indicated that astaxanthin had no significant effect on growth parameters and carcases composition analysis, but has a direct effect on survival rate and liver composition of beluga sturgeon. Thus, we suggest that natural astaxanthin is a potent antioxidant that is prevent to liver oxidation, thus it is an essential nutrient required for som growth parameters such as survival rate in this species.

Keywords: Astaxanthin, Growth parameters, *Aematococcus pluvialis*, *Huso huso*, Carcases and Liver chemical composition.