A comparative study of proximate composition of Artemia urmiana enriched with different sources and levels of HUFA

Abstract

The nutritional quality of commercially available Artemia strains is relatively poor in Eicosapentaenoic acid (EPA), Arachidonic acid (ARA) and especially Docosahexaenoic acid (DHA). Hence, it is essential and common practice to enrich this live prey with emulsions of special oils. One commercial ICES30/4 (Belgium), Linseed oil as a vegetable oil, Cod liver oil and Sturgeon ovary oil as two animal oils with EPA amounts in these oils were 6.29, 0.03, 11.39, 7.55 and the DHA amounts were 20.90, 0.00, 7.64, 2.76 respectively with three concentrations (100, 200 and 300ppm) during two enrichment periods (12 and 24h) were tested in order to improve the HUFA content, the DHAIEPA ratio and ARA content of Artemia urmiana nauplii. The results showed that Artemia enriched with different levels of vegetable oil and enrichment periods was poor in relation to either HUFA content and DHAIEPA ratio but the fish oils and emulsion resulted in HUFA incorporation. Sturgeon ovary oil caused the poorest DHAIEPA ratio enrichment (0.40 in 300ppm-24h) but the commercial emulsion (ICES30/4) was found as the best for DHA/EPA ratio enrichment (1.20 in 300ppm-24h). Cod liver oil (0.53 in 100ppm-24h) can be a good internal source substitute for improving the DHAIEPA ratio enrichment compared to ICES30/4 due to price and availability. As a result, HUFA content was increased with enrichment level 200ppm during 24h. Also, all oil sources improved lipid and protein percentages in A. urmiana nauplii.

Keyword: Artemia urmania; Enrichment; Proximate composition