Changes in fatty acid profiles during maturation and fatty acid composition of eggs and embryos of female guppy *Poecilia reticulata* (Peters) fed on different diets

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Abstract

Changes in the fatty acid profiles of muscle during maturation and the fatty acid composition of eggs and embryos in the female guppy, *Poecilia reticulata,* fed different diets were investigated. Three feed types currently being used in guppy farming, namely Diet 1, 2 and 3, containing 18.26%, 29.27% and 43.60% crude protein and 4.17%, 4.55% and 9.47% crude lipid, respectively, were used in this experiment. The percentage of lipid in fry was 25.03 and varied between 26.56- 29.83 in mature fish and between 6.30 and 7.28 in their eggs and embryos. The fish fed Diet 3 had significantly ($p<0.05$) higher lipid in muscle, eggs and embryos than the fish fed other two diets. Significantly higher levels of EPA, DHA, HUFA, (n-3) PUFA, (n-3) HUFA and (n-3)/n-6 levels were recorded with Diet 3 and in the muscle and the eggs of the fish fed this diet than the other two. There were no significantly different levels of (n-6) PUFA and (n-6) HUFA in the muscle of the fish fed Diets 2 and 3, though the levels were higher than those in the fish fed Diet 1. There were some significantly different levels of fatty acids recorded in the eggs and embryos of the fish fed the same diet, but there were no significantly different levels of fatty acids recorded between the eggs and embryos. The results showed, therefore, that the fatty acid composition of fish muscle, eggs and embryos reflected those in the diet and that the fatty acid profiles of guppies can therefore be modified by altering the source of fats and oils used in formulating fish feed.

Keywords: *Poecilia reticulata,* fatty acids, (n-3) PUFA, (n-3) HUFA, (n-6) HUFA

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