

ANALYSIS OF LIPID CLASSES AND FATTY ACID COMPOSITION IN MUSCLE OF THE GREY MULLET *CHELON LABROSUS* LIVING IN TUNISIAN GEOTHERMAL WATER

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Abstract

Lipid classes and fatty acid composition of polar, neutral lipid fractions and the fatty acid composition of grey mullet *Chelon labrosus* from the geothermal water were determined. (PC) and (PE) was the main component in the Polar class as the TAG in the neutral lipid. Docosahexaenoic acid (22:6n-3) and eicosapentaenoic acid (20:5n-3) were rich in the PC and PE fractions. Saturated fatty acids (SFA) were the most representative, followed by Monounsaturated fatty acids (MUFA) in the neutral fraction. The major constituents of total fatty acids in *Chelon labrosus* were saturated: palmitic (16:0) and stearic acid (18:0), monoenes: oleic (18:1) and palmitoleic acid (16:1), polyunsaturated: arachidonic (20:4 n-6), eicosapentaenoic (20:5 n-3) and docosahexaenoic acid (22:6n-3), but their amounts differed significantly.

Keywords: Aquaculture, Fishes, Physiology

Introduction

The thick lipped grey mullet (*Chelon labrosus*) belongs of the family Mugilidae order Perciformes. This species are very euryhaline with some estuarine and freshwater families providing a good model for the assessment of physiological plasticity related to changes in environmental salinity. Grey mullet (Osteichthyes, Mugilidae) commonly inhabit tropical and warm-temperate estuaries [1]. In Tunisia It has been demonstrated that *Chelon labrosus* can live in geothermal water in the south of the country. In the past ten years, investigations have shown the significant potential of the geothermal, brackish water for the successful culture of aquatic organisms (fish, crustaceans, algae, etc). The present study was carried out to examine lipid classes, and fatty acid compositions of the grey mullet muscle adapted to the geothermal water, in order to acquire data for lipid biochemistry in grey mullet (*Chelon labrosus*).

Materials and methods

Fish: Immature thick lipped grey mullet (*Chelon labrosus*) (30–40g body mass) were provided by an experimental fish culturing centre in south of the country (Béchima (INSTM -Tunisia).

Lipid analysis: Total lipids were extracted with chloroform: methanol (2:1, v/v) using the method of Folch [2].

Separation of lipid classes: Lipid class separation was performed by thin layer chromatography TLC Two dimensional on silica-gel plates according to [3]. Each lipid class is subjected afterwards to gas chromatography.

Statistical analysis: data were analysed for significant difference of means, ANOVA, and inspected by Duncan test at level of $p < 0.05$.

Results and discussion

In the analysed muscle tissue samples, we identified 22 identified fatty acids in *Chelon labrosus* in muscle tissue samples. Palmitic (16:0, 34.25 %), stearic (18:0, 6.8 %) oleic (18:1 n-9, 22.2 %) and linoleic (18:2n-6, 12.52 %) acid were the most abundant fatty acids in muscle of *Chelon labrosus*. Lower quantities of docosahexaenoic acid (DHA 22:6 n-3, 1.7%), eicosapentaenoic acid (EPA 20:5 n-3, 1.4%), arachidonic acid (20:4 n-6, 0.8%). Polar lipid fractions (PI, PS, PC, and PE) from the analysed fish species in this study contained a great variety of different fatty acids. On the other hand, TG were poorer in the diversity of fatty acids and contained a minor of different fatty acid. All of the identified fatty acids were found in Polar lipid fractions.

References

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