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Title: *The role of lipids in two fish species of the Stichaeidae family from high latitudes*

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A comparative study of the lipid status (the total lipid content, separate phospholipids, triacylglycerols, cholesterol esters, cholesterol, waxes, and the fatty acids of the total lipids) in adults of *Leptoclinus maculatus* from Svalbard (Isfjord; Arctic) and *Lumpenus fabricii* from the White Sea (Onega Bay and Tersky Shore; sub-Arctic) was performed. The total lipid levels did not vary significantly in the fishes from high latitudes and ranged from 11.4 to 11.8% dw. Phospholipids dominated in *L. maculatus* from Svalbard and *L. fabricii* from Onega Bay while triacylglycerols was abundant in *L. fabricii* from Tersky Shore. The level of cholesterol was higher (3.6% dw) in *L. maculatus* than in *L. fabricii* from Tersky Shore and Onega Bay (0.94 and 1.72, respectively). Heterogeneity in the certain PL classes dependent on the species and place of habitation was found. The monoenic FAs of total lipids dominated the FA classes in the fishes from high latitudes (from 38.8% to 42.7% of the total FAs) with 18:1(n-9) and 16:1(n-7) abundance. The contents of 20:1(n-9) and 22:1(n-11), which are zooplankton biomarkers, comprised a minor component at 0.60 to 3.35 % of the total FAs. The 16:0/18:1(n-9) ratio was 1.26, 1.37 and 1.18 for *L. maculatus* from Isfjord, *L. fabricii* from Tersky shore and Onega Bay, respectively; these ratio reflect the level of activity of the lipid metabolism. *L. maculatus* from Svalbard had a low amount of the polyenic FAs (26.2% of the total FA) compared with *L. fabricii* from the White Sea (33.9 to 34.7% of the total FAs). These results demonstrate the differences in the trophoecological and oceanographic environment of these species and indicate the features of genetically determined processes of biosynthesis and modifications of certain lipid classes and fatty acids. This comparative study shows the importance of considering certain trends in the lipid profiles of these fishes as specific features of the organization of the ecological and biochemical mechanisms of adaptation. Such kind of research can be useful for identifying metrics for monitoring the status of high-latitude ecosystems that experience changing environmental factors. This research was supported by the Grants NSh-1642.2012.4, RFBR 11-04-00167-a, the Presidium of RAS Program of Fundamental Research 2012-2014, and the FCP "Mechanisms of adaptation and sustainability of organisms and populations of plants and animals in the North (physiological, biochemical and molecular-genetic aspects)". We are also grateful to the TUNU-MAFIG Programme (University of Tromsø), 'TUNU III cruise 2007'. The research was carried out as part of the "Ice



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