Analyses of various lipid classes and their fatty acid composition from the body flesh of some commercially cheap marine fish species, namely, Gangetic hairfin anchovy (*Setipinna phasa* Hamilton 1822), khoira (*Gudusia chapra* Hamilton 1822), Topsia (*Polynemus paradiseus* Linnaeus 1758) and Pangasius (*Pangasius pangasius* Hamilton 1822) found in Bay of Bengal, have not been done so far though they are very much available in the local markets. The recent study evaluated the various lipid classes, and their fractions as well as the distribution of fatty acids in lipid classes along with ω3 and ω6 polyunsaturated fatty acids (PUFA) having potential biomedical benefits, using thin layer chromatography and gas liquid chromatography from the muscles of these four fishes. The present analyses are focused on the exploration of the nutritional quality to assess their usefulness for human consumption. Among the major fractions of the total lipid, neutral lipids (NL) were found to be the most predominant followed by phospholipid (PL) and glycolipid (GL) in all the cases. Within the major fractions of the NL, triacylglycerol (TG) found to be the most predominant followed by 1-O-Alkyl-2, 3-diacylglycerol (ADAG) and in the PL fraction phosphatidylcholine (PC) is found to be largest followed by cardiolipin (CL) in all the fish species under study. Twenty five fatty acids from *S. phasa*, twenty six fatty acids of *G. chapra*, thirty one fatty acids from *P. paradiseus* and thirty fatty acids from *P. pangasius* were quantified from their body flesh. Among saturated fatty acids (SFA), palmitic acid was the predominant and oleic acid was the most abundant monounsaturated fatty acids in all. The amount of SFA of all lipid classes was maximum than the other fatty acid classes. In TL docosahexaenoic acid (DHA) is predominant in *S. phasa* and *P. paradiseus* where as eicosapentanoic acid (EPA) is the major constituent in *G. chapra* and *P. pangasius*. Among the fishes maximum ω3 fatty acids are present in *G. chapra* and ω6 is predominant in *P. pangasius* followed by *P. paradiseus* in their GL. In PL, occurrence of PUFA as well as EPA and DHA is maximum than the other lipid fractions. These fishes show the similar pattern of muscle lipid and fatty acid distribution and contain sufficient amount of ω3 and ω6 fatty acids which can maintain better cardiac health of human upon consumption.