Non-essentiality of DHA for Herbivorous Gastropods: Lack of DHA in the Lipids of Herbivorous Gastropods

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It is well known that n-3 Polyunsaturated fatty acid (PUFA) is essential for both marine fish and invertebrates, and docosahexaenoic acid (DHA) is found as a major component in tissue lipids of all marine animals. To clarify lipid physiology of gastropods and their essentiality of n-3 PUFA, lipid and fatty acids of a turban shell *Batillus cornutus* and abalones *Haliotis* spp., which are herbivorous gastropods, were analyzed. In their foots, phospholipids were the major components, with medium levels of sterols, while triacylglycerols were the major component in their viscera. The major fatty acids in both the organs were 16:0 and 18:0 as saturates, 18:1n-7, 18:1n-9, and 20:1n-13 as monoenes, 20:4n-6 (arachidonic acid: AA), 20:5n-3 (icosapentaenoic acid: EPA), and 22:5n-3 as PUFA, without DHA. The lack of DHA was found in all the specimens. The high levels of AA and EPA in the polar lipids suggest that these PUFA originate from their dietary lipids. The lack of DHA in all specimens suggests that influence of the algal lipids and incapable of DHA biosynthesis in the tissue levels. This finding also suggests that the mollusks genus *Batillus*and *Haliotis* do not require DHA so obvious in marine fish species.