Docosahexaenoic Acid: Nutrient and Precursor of Bioactive Lipids
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Docosahexaenoic acid (DHA), the main polyunsaturated fatty acid of the brain and retina, is not efficiently made from its essential precursor, linolenic acid, in humans. The most part must then derive from exogenous sources, crossing the blood-brain barrier. This review will discuss the possibility for DHA-containing lysophosphatidylcholine to be more efficient to target the brain with DHA compared to the non-esterified form of the acid. On the other hand, as a highly unsaturated fatty acid, DHA is considered to possibly affect the redox status in humans. In contrast to high concentrations of DHA which may promote lipid peroxidation, low concentrations exhibit “anti-oxidant” activities, either in vitro or in vivo. Finally the oxygenation metabolism of DHA through lipoxygenase enzymes and bioactivity of the metabolites, in particular toward thromboxane-induced platelet aggregation or smooth muscle cell contraction, will be discussed.