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Effect of light on oxidative stability of lipids from *Thunnus albacares*

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Auto-oxidation or atmospheric oxidation occurs in food lipids (especially Unsaturated Fatty Acids – USFA) in the presence of oxygen and energy (heat/light). This phenomenon results in the production of peroxides which deteriorate the quality of lipids in food. Fish oil is a food lipid with a higher level of USFA which is vulnerable to oxidization and hence loose its nutritional value. The initiation mechanism for this reaction is either by Classical free radical mechanism (Operate in the dark) or by Photo-oxidation mechanism (Triggered by light). Therefore, this study was conducted to investigate whether there is significant effect of light on the oxidative stability of selected fatty acids in fish oil. The oxidative stability was evaluated periodically by determining the fatty acid composition of the oil of *Thunnus albacares* as fatty acid methyl esters using gas chromatography (GC). Peroxide value (PV) was determined iodometrically. Finally the oxidative index of the oil was determined. There was no significant difference of variation of PV and FFA between dark and light. The calculated oxidative index values were 1.0 and 0.4 respectively for dark and light conditions. This result indicated relatively greater alteration in light compared to dark conditions. Oxidative stability of α-linolenic omega-3 acid (C 18:3 n-3) and Arachidonic omega-6 acid (C 20:4 n-6) were significantly different to other fatty acids according to Pearson's correlation coefficient. Therefore, the degree of oxidation of fatty acids is affected by the absorbed energy from the light when oxidation influence factors are restricted.

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