

Information about the oxidative stability index (OSI) measurement

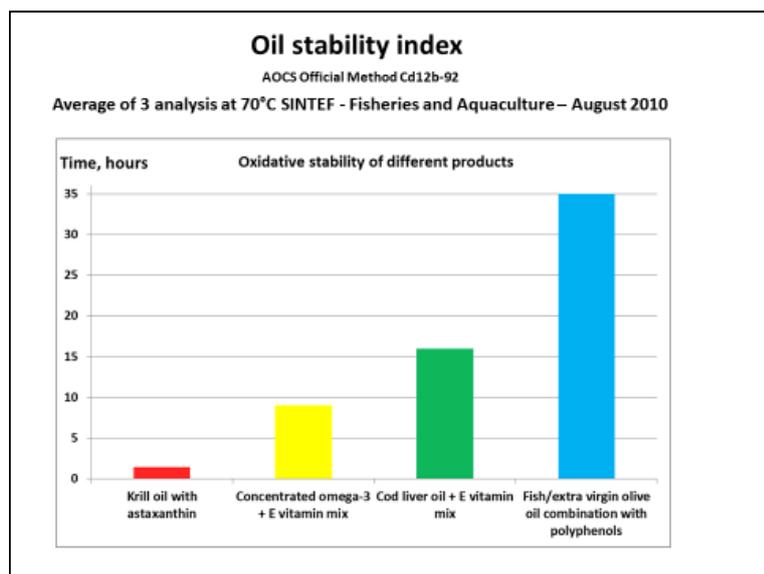
Performed at SINTEF (Fisheries and Aquaculture), 2010, ordered by Itogha AS to investigate the oxidative stability of the product fish oil/extra virgin olive oil combination compared with other competing products on the market.

About the method

All fats and oils are prone to oxidation, however the rapidity of the oxidation depends on the degree of unsaturation of the fatty acids in the fat or oil and the presence to antioxidants, among other. Other external factors that influences lipid oxidation is high temperature, oxygen and light.

Oxidative Stability Index (OSI) is a method that determines the relative resistance of fats or oils to oxidation. The OSI analysis can for instance be used to compare various oils to predict their respective shelf-life, and to evaluate the effectiveness of antioxidants.

The OSI method (AOCS Cd12b-92) is performed by passing air through a sample that is kept under high temperature (70-110 °C). The air and temperature aids a rapid degradation of the triglyceride into volatile organic acids. The air stream flushes the volatile acids from the oil into a conductivity cell containing water where the acids are solubilized. These acids, once dissolved in the water solution, disassociate into ions, thus changing the conductivity of the water. A rapid rise in conductivity corresponds to the induction point, which gives the oxidative failure of the sample. The time (hours) to the induction point is the OSI time.



Results

The given result is presented as average values of three measurements on the same product. The OSI result is given in hours. The oil combination with fish oil and extra virgin olive oil rich in polyphenols (strong antioxidants) are clearly the most oxidative stable of the measured oils as it took around 35 hours at 70°C to reach the induction point.

Krill oil with natural astaxanthin reached the induction point after around 1 hour, and concentrated omega-3 (EPA+DHA) product with added tocopherols as antioxidant was oxidized after ca 9 hours. Cod liver oil with tocopherols added as antioxidant reached the induction point after 16 hours.

The results of this study demonstrate that fish oil blended with extra virgin olive oil rich in polyphenols is an oxidative stable product, indicating the protective effects of the polyphenols on the fish oil.