

Determination of Lipid Oxidation in Salmon Oil using Near Infrared Spectroscopy – A preliminary study

Cheau Ling Poon¹, Chung-Eun Kim¹, Turid Rustad¹, Kari Thyholt²

¹ Department of Biotechnology, NTNU, Trondheim, Norway

² Mills DA (Dep Trondheim), Trondheim, Norway

Essential fatty acids in fish are beneficial for human health. Consequently, there is a great interest in the food industry to use marine raw materials or their lipids in functional foods. However, marine lipids are easily exposed to oxidation, and traditional chemical quality analyses are time consuming and labor intensive. Near Infrared (NIR) spectroscopy could potentially be used for more rapid but still objective measurements. In this study, oil samples extracted from farmed salmon (*Salmo salar*) were scanned by a Foss NIRSystems 6500 instrument with a transreflectance probe. Corresponding chemical reference analyses of peroxide value (PV) and thiobarbituric acid value (TBARS) were carried out on each sample. Multivariate calibration models were computed based on the NIR spectra and the chemical values, using partial least square (PLS) regression. The validated models indicated that NIR could be a useful method for rapid measurement of marine lipid oxidation.