Volatile organic compounds from interactions between salmon oil and myoglobin

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An intake of fatty fish containing polyunsaturated fatty acids (PUFA), have been associated with an increased well-being and decreased risk of several adverse conditions (WHO, 2003; WCRF/AICR, 2007). For instance, it is believed that PUFA influence the inflammatory processes in the body (Calder, 2006). Eicosapentaenoic (EPA) and docosahexanenoic acids (DHA) are some of the most interesting fatty acids in this respect being precursors to prostaglandins which are affecting blood vessel dilation/constriction, blood clotting and inflammation. However, PUFA are prone to oxidation dependent on the degree of saturation and chain-length. Decimation of PUFA can lead to a less optimized product regarding the health-related perspective. Also, the oxidation products are perceived at very low concentrations leading to unsatisfactory quality. A model system consisting of salmon oil and myoglobin was established directly in vials suitable for dynamic single headspace analysis by purging the volatiles onto a solid adsorbent, prior to desorption and separation/detection by GC/MS. Oxidation products of the interaction between myoglobin and components in salmon oil will be presented.

References:

Calder, P.C. n-3 polyunsaturated fatty acids, inflammation, and inflammatory disease. *Am J Clin Nutr* 2006; 83:1505S-1519S.

World Cancer Research Fund / American Institute for Cancer Research. Food nutrition, physical activity and the prevention of cancer: a global perspective. AICR: Washington DC, 2007.

Word Health Organization. Diet, Nutrition and the prevention of chronic diseases. WHO technical report series 916. Geneva, Switzerland, WHO, 2003.