

## **FORMATION OF GEOMETRICAL TRANS-ARACHIDONIC ACID ISOMERS AT HIGH TEMPERATURES**

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Long chain polyunsaturated fatty acids (LCPUFA) such as arachidonic acid (AA) or eicosapentaenoic acid are direct precursors of eicosanoids. Furthermore, a couple of other LCPUFAs exert biological activity via lipoxygenase reaction or conversion to isoprostanes by radical induced reaction. It has also been shown that trans-isomers of LCPUFAs may influence the bio-activity of the LCPUFA pool in the body.

In this study we focused on the question, if such isomers could be formed in frying or baking conditions of foods rich in arachidonic acid (C20:4n6). AA is the precursor of the biologically most potent eicosanoids and is abundant in a variety of foods of animal origin that are traditionally used for baking or frying, such as pork meat, liver and eggs.

In a first experiment, trans-arachidonic acid isomers (tAA) were formed by treatment of analytical grade AA with paratoluenesulfonic acid (PTSA). The resulting mixture of isomers was separated on a Ag<sup>+</sup>-HPLC system (column: ChromSphere 5 Lipids, 250x4.6 mm, Varian, Inc.) with Hexane as mobile phase, containing 0.4% acetonitrile. The fractions representing tAA with increasing number of trans double bonds were collected and separated by gas chromatography using a 100 m CPSil 88 (Varian, Inc.)

In a set of experiments, pork liver, bacon and lard were subjected to thermal treatment in a conventional laboratory drying oven at temperatures from 150 – 300 °C in various durations from 0.5 to 4 h.