

## **P21: RAPID EVALUATION OF FREE FATTY ACIDS CONCENTRATION IN EDIBLE HEMP FOOD CHAIN USING ATR-FTIR SPECTROSCOPY**

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In the last years, hemp seed food products have received renewed interest for health benefits, including the lowering of cholesterol and high blood pressure, as they contain phytochemicals with significant antioxidative properties, perfect balance of essential amino acids and optimal acidic composition. Indeed, hempseed contains 20-25% of protein, 25-35% of oil, 10-15% of insoluble fiber and a rich array of minerals.

Hemp oil is beneficial for human nutrition due to its high portion of unsaturated fatty acids. In particular, hempseed oil is especially rich in two essential fatty acids-linoleic acid (18:2, omega-6) and alpha-linolenic acid (18:3, omega-3). Also the byproducts originating from hemp food chain, in particular flour, show interesting nutritional properties, due to high amounts of proteins, dietary fibers, and other bioactive compounds that provide positive health benefits when consumed.

The recent developments in ATR-FTIR spectroscopy instrumentation and the applications of this technique have been expanding in food research, facilitating particularly the studies on edible oils and fats. FT-IR methods have demonstrated to be rapid and nondestructive analytical tools with minimum sample preparation necessary. In the present study ATR-FTIR spectroscopy has been used to evaluate the free fatty acids content in hemp seeds, oil that is obtained by them with cold pressing, and flour. The carbonyl peaks area on the second derivate of the ATR-FTIR spectra has been used to monitor the composition in free fatty acids in hemp seed oil and flour.