

Characterization of canola oil extracted by different methods using fluorescence spectroscopy

Three types of canola oil were characterized using fluorescence spectroscopy: cold pressed, chemically extracted and commercial canola oil. The cold pressed oil was then heated up to 250°C to monitor the effects of temperature on the oil.

Sample preparation

There is no mention of special sample preparation to perform fluorescence spectroscopy

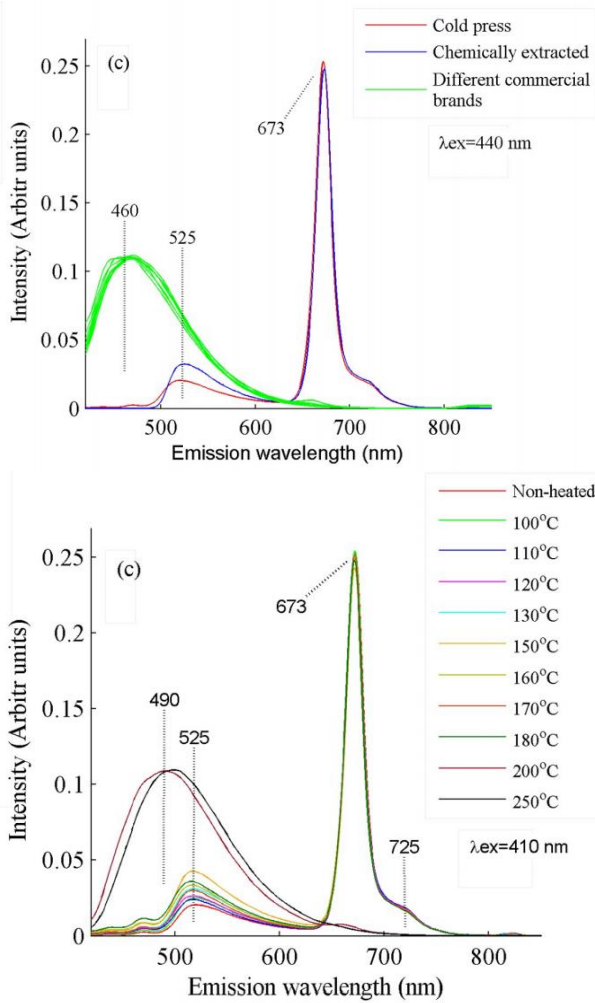
Data acquisition conditions

The fluorescence spectra of all canola oil samples using different exciting wavelengths in the range 280–420 nm have been acquired by a spectrofluorometer system FluoroMax-4 (Horiba Scientific, Jobin Yvon inc, USA). A continuous 150 W ozone free xenon arc lamp is used as the excitation source and the photomultiplier (R928P) was used as the detector.

Results

Cold pressed and chemically extracted oil have a very similar fluorescence spectra, the emission band at 525 correspond to Vitamin E and beta carotenes, while the band at 673 nm corresponds to and chlorophylls, these bands are absent in the commercial oils spectra. The emission band at 460 nm on the commercial oils corresponds to oxidized products of isomers of Vitamin E.

The spectrum of cold pressed oils changes when its temperature increases, there is no significant change up to 180°C, over this temperature, the emission bands of Vitamin E, beta carotenes and chlorophylls disappear and an emission band at 490 nm appears, which corresponds to oxidized and oxidation products.



Fluorescence spectra of the three different types of analysed oil (upper). Fluorescence spectra of cold pressed oil heated at different temperatures (lower).