

# INVESTIGATION OF ANALYTE DEGRADATION WHEN USING PRESSURIZED FLUID EXTRACTION (PFE)

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## Abstract

Pressurized fluid extraction is an interesting alternative to conventional extraction techniques, since elevated pressure and temperature of a solvent offers advantages such as faster and more efficient extractions (due to higher diffusion rates, lower viscosity and lower surface tension). Furthermore, it allows easy-to-tune properties of the solvent by merely changing temperature and pressure. The extractions are generally faster than conventional extraction techniques, thereby preventing time dependent chemical degradation. But the use of elevated temperature might on the other hand cause degradation of thermo-labile substances.

Anthocyanins are a class of naturally occurring pigments with anti-oxidative properties. They are labile to light, alkaline pH and temperature [1,2]. In this study, time- and temperature-dependent degradation, and possible degradation products of anthocyanins, were investigated in static as well as dynamic pressurized fluid extraction systems. "Subcritical" water/ethanol/formic acid mixtures at temperatures above 100°C and 50 bars were used as solvent. Furthermore, two complementary analytical techniques were used to evaluate the extracts – liquid chromatography with electrospray ionization – quadropole MS/MS detection and photodiode array detection; and capillary electrophoresis with electrospray ionization – time-of-flight MS detection

[1] F.C. Stintzing, A.S. Stintzing, R. Carle, B. Frei, R.E. Wrolstad, *J. Agric. Food Chem.* **2002**, 50, 6172 - 6181

[2] M. Dyrby, N. Westergaard, H. Stapelfeldt, *Food Chem.* **2001**, 72, 431 - 437