

Title Identification of soluble phenolic acids in hazelnut (*Corylus avellana* L.) kernel
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Citation ISHS Acta Horticulturae 845:677-680. 2009.
Keyword phenolic; phenolic acids; hazelnut; kernel quality; HPLC

Abstract

Phenolic acids are a subclass of a large category of compounds commonly referred to as “phenolics”. They are a very important group of secondary plant metabolites whose roles are still unknown. Due to their antioxidant behaviour and the potential health benefits associated with these simple phenolic compounds, many authors have proposed different techniques to extract these compounds from vegetable foods. Therefore, the aim of this work is to compare the experimental conditions commonly used to detect soluble phenolic acids (both free and esterified) in order to investigate the phenolic constituents in hazelnut kernel extracts. Phenolic compounds present in defatted samples were extracted using different solvent mixtures under reflux conditions at different temperatures; afterwards, the extraction and hydrolysis of phenolic acids was performed. HPLC analysis of the extracts obtained highlighted the presence of twelve phenolic acids. The main compounds identified were gallic acid, caffeic acid, *p*-cumaric acid, ferulic acid and sinapic acid. In all extracts, gallic acid was the most abundant, in both the free and esterified form. Ethanol solution (80% v/v) at 80°C was the most effective solvent for the quantitative extraction of benzoic acid derivatives, but extract obtained with acetone solution (80% v/v) at 50°C showed the highest number of identified phenolic acids. All the other suggested methods showed low extraction capacity for these compounds. Using these optimized methods, new research is in progress to define the effect of storage and roasting on these compounds.