

# Comparative Determination of Anthocyanins, Low Molecular Weight Phenols, and Flavanol Fractions in *Vitis vinifera* L. cv Carmenere Skins and Seeds by Differential Solvent Extraction and High-Performance Liquid Chromatography

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## ANALYTICAL LETTERS

Volumen: 49

Número: 8

Páginas: 1127-1142

DOI: 10.1080/00032719.2015.1094661

Fecha de publicación: 2016

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## Resumen

Although numerous methods have been used to extract polyphenols from vegetal sources, these procedures have been rarely compared directly. Herein, four maceration and extraction methods for phenolics from Carmenere (*Vitis vinifera* L.) skins and seeds are evaluated. Polyphenols were extracted with mixtures of 4: 1 (v/v) methanol: water, 4: 1 (v/v) acetone: water, 4: 1 (v/v) methanol: water, 4: 1 (v/v) acetone: water, and 1: 9 (v/v) ethanol: water. The extracts were characterized by spectrophotometry for tannins, anthocyanins, total phenols, and color; proanthocyanidin fractionation for monomers, oligomers, and polymers; and high-performance liquid chromatography for anthocyanins and low molecular weight phenols. Seed and skin extracts in methanol/water provided higher polyphenol concentrations compared to the use of acetone/water. Seeds and skins macerated in ethanol/water showed lower concentrations in most polyphenols while seeds and skins that were consecutively macerated in methanol/water and acetone/water showed the highest concentrations of most compounds. In conclusion, solvent polarity, extraction time, and vegetal matrix affected the polyphenol composition of grape seed and skin extracts.

## Palabras clave

**Palabras clave de autor:** [Extraction methods](#); [grapes](#); [high-performance liquid chromatography](#); [HPLC](#); [polyphenol](#); [proanthocyanidin](#)

**KeyWords Plus:** [ANTIOXIDANT ACTIVITY](#); [BY-PRODUCTS](#); [CABERNET-SAUVIGNON](#); [RED WINE](#); [GRAPE](#); [VARIETIES](#); [PROANTHOCYANIDINS](#); [POLYMERIZATION](#); [OPTIMIZATION](#); [TEMPERATURE](#)

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## Financiación

Entidad financiadora	Número de concesión
Fondecyt-Chile	1150240 1140882

[Ver texto de financiación](#)

## Editorial

TAYLOR & FRANCIS INC, 530 WALNUT STREET, STE 850, PHILADELPHIA, PA 19106 USA

## Categorías / Clasificación

Áreas de investigación: Chemistry

Categorías de Web of Science: Chemistry, Analytical

## Información del documento

Tipo de documento: Article

Idioma: English

Número de acceso: **WOS:000375038300001**

ISSN: 0003-2719

eISSN: 1532-236X

## Información de la revista

- Impact Factor: [Journal Citation Reports®](#)

## Otra información

Número IDS: DK6MN

Referencias citadas en la Colección principal de Web of Science: **46**

Veces citado en la Colección principal de Web of Science: **0**