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Analysis of monovarietal wines from “Ribera del Guadiana” (Extremadura, Spain). Quantification of glyoxal and methylglyoxal as a parameter of wine quality

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The dicarbonyl compounds such as glyoxal and methylglyoxal are often detected in fermented foods and beverages due to microbial activity. They appear in all types of wines, especially after malo lactic fermentation and mainly in red wines. In general, they are important in oenology for different reasons: sensory impact, reactivity with other compounds or potential microbiological effects. The structure of the dicarbonyl compounds makes them difficult to determine by selective methods such as molecular fluorescence. Derivatization, a process of chemically modifying the analyte to produce a derivative with new properties, facilitates oral lows analysis. The aim of this research is to apply a previously optimized derivatization reaction of glyoxal to another dicarbonyl compound, specifically methylglyoxal. Once derivatized; it is intended to separate and quantify glyoxal and methyl glyoxal by liquid chromatography with fluorescence detection, thereby developing a chromatographic method that allows the determination of these compounds in fermented beverages (wine). Research has been done in reverse phase liquid chromatography using a 100% aqueous mobile phase, yielding a resolution between two peaks so approximately 2. Influence of the flow of the mobile phase and the stability of the derivatives of glyoxal and methylglyoxal was studied. Thereaction was followed by chromatography and once optimized chemical and instrumental parameters, we proceeded to the establishment of the calibration lines, using both analytical signals (peak area and height). The developed method was applied to samples of varietal wine from the D.O. “Ribera del Guadiana”.

Biography

M I Rodríguez graduated in Chemical Science in 1992. She completed her PhD in 1997 from University of Extremadura and performed Postdoctoral studies from Louis Pasteur University (Strasbourg, France), Louisiana State University (Baton Rouge, United States), University of Castilla-La Mancha(Ciudad Real, Spain)and University of Granada (Granada, Spain). She was Assistant Professor at the Analytical Chemistry Department of University of Extremadura from 1999 to 2004; Lecturer from 2004 to 2007and became Associate Professor in November 2007. She has published more than 30 papers in reputed journals and has directed three doctoral dissertations that obtained the highest rating.

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