

NINTH SYMPOSIUM

# In Vino Analytica

## Scientia 2015

*Analytical Chemistry for Wine, Brandy and Spirits*

*Book of Abstracts IVAS 2015*

*In Vino Analytica Scientia Symposium  
Mezzocorona (Tn) Italy 14-17 July 2015*



FONDAZIONE  
EDMUND  
MACH



LAIMBURG

Research Centre  
for Agriculture and  
Forestry

**CHEMAN Y53 - Role of major wine constituents in the foam sensory properties of sparkling wines made from red grapes**

Miriam Lázaro<sup>a</sup>, Leticia Martínez-Lapuente<sup>a</sup>, Sara Bañuelos<sup>a</sup>, Zenaida Guadalupe<sup>\*a</sup>, Belén Ayestarán<sup>a</sup>, Marta Bueno-Herrera<sup>b</sup>, Carlos González-Huerta<sup>b</sup>, Pedro López de la Cuesta<sup>b</sup>, Silvia Pérez-Magariño<sup>b</sup>

<sup>a</sup> Instituto de Ciencias de la Vid y del Vino (Universidad de La Rioja, Gobierno de La Rioja y CSIC), C/ Madre de Dios 51, 26006 Logroño, Spain

<sup>b</sup> Instituto Tecnológico Agrario de Castilla y León, Consejería de Agricultura y Ganadería, Ctra. Burgos Km. 119, 47071 Valladolid, Spain

\*zenaida.guadalupe@unirioja.es

**ABSTRACT** - Sparkling wines elaborated following the traditional or *champenoise* method undergo a second fermentation in closed bottles of base wines, followed by aging of wines with lees for at least 9 months. The foam of sparkling wines is a key parameter of their quality. However, the compounds that are directly involved in foam quality are not yet completely established. Various studies have attempted to correlate specific families of compounds in sparkling wines with the quality of their foam properties. However, in complex mixtures such as sparkling wines, foam behavior will lastly result from the synergistic interaction between the different foam active compounds. Moreover, most scientific studies have been focused on measurements of the instrumental foam properties, and no studies have been conducted to ascertain which chemical compounds are those that influence the foam sensory attributes of sparkling wines.

This work aims at identifying the contribution of the different wine compounds to the foaming properties of sparkling wines made with red grape varieties.

All the sparkling wines were produced in the Instituto Tecnológico Agrario de Castilla y León (Spain) following the traditional method. Monovarietal sparkling wines were elaborated during different vintages (2009-2013) with *Vitis vinifera* cv. Prieto Picudo grapes, *Vitis vinifera* cv. Tempranillo grapes and *Vitis vinifera* cv. Garnacha grapes. Samples for analyses were taken after 9-12 months of aging on yeast lees. Wines were riddled and disgorged before analysis and liqueur d'expédition was not added. Foaming properties were analyzed by sensory analysis. Five previously defined descriptors (initial foam, foam collar, foam area, bubble size and effervescence) were evaluated. Monomeric phenols, proanthocyanidins, amino acids and biogenic amines were analyzed by HPLC-DAD [1-4]. Monosaccharides forming polysaccharide families were analyzed by GC-MS [5]. The results of this study showed high correlations between various chemical compounds and the foam sensory properties of the sparkling wines.

**ACKNOWLEDGMENTS** - The authors thank the INIA for financing this study through the projects RTA2009-00029-C02-01 (with FEDER funds) and RTA2012-00092-C02-02.

**REFERENCES**

- [1] Gómez-Alonso S., García-Romero E., Hermosín-Gutiérrez I. *Journal of Food Composition Analysis* 2007, 20, 618-626.
- [2] Guadalupe Z., Soldevilla A., Sáenz-Navajas M.P., Ayestarán B. *Journal of Chromatography A*: 2006, 1112, 112-120.
- [3] Kennedy J.A., Jones G.P. *Journal of Agricultural and Food Chemistry* 2001, 49, 1740-1746.
- [4] Gómez-Alonso S., Hermosín-Gutiérrez I., García-Romero E. *Journal of Agricultural and Food Chemistry* 2007, 55, 608-613.
- [5] Guadalupe Z., Martínez-Pinilla O., Garrido A., Carrillo J.D., Ayestarán B. *Food Chemistry* 2012, 131, 367-374.