



## Chapter 26 - Electronic Tongues for the Organoleptic Characterization of Wines

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### Abstract

The quality of wines is usually evaluated by traditional chemical analysis or by a sensory panel composed of trained experts. In recent years, a new class of instruments, the electronic tongues, have been successfully applied to the analysis of wines including quality control, aging control, or detection of fraudulences among others. The use of arrays of electrochemical sensors is of particular interest in the field of wines due to the importance of antioxidants, which are responsible for their organoleptic characteristics and also for their health benefits. In this chapter, the current status of the research and development in the field of electronic tongues applied to the analysis of wines is presented. Their potential applications in the wine industry are described. The capabilities of the system to predict the concentration of polyphenols, sugars, pH, or other compounds of interest are also discussed. The chapter finishes with a final comment about the expected future developments.

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### Keywords

electronic tongue; wine; winemaking; aging; barrel; fraud; biosensor; nanotechnology

## Cited by (4)

[Beverage spoilage yeast detection methods and control technologies: A review of \*Brettanomyces\*](#)

2018, International Journal of Food Microbiology

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...In recent years, this kind of devices has been employed for wine quality and aging control. They can predict the concentration of different compounds of interest in wine such as phenols, sugars and pH (De Saja et al., 2016). The electronic tongues could be considered as analytical instrument that artificially replicates the human gustatory system, reproducing the five tastes sensation (sweet, salty, sour, bitter, and umami)....

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2018, Food Research International

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...According to these results, the use of the skin of grapes as the sensitive layer provides an easy and direct method to assess the phenolic maturity of grapes. Inspired in holistic analytical methods where arrays of sensors are combined with a pattern recognition software (Merkyte, Morozova, Boselli, & Scampicchio, 2017; Pigani et al., 2018; Rodriguez-Méndez, de Saja, Medina-Plaza, & Garcia-Hernandez, 2016; Sliwinska, Wisniewska, Dymerski, Namiesnik, & Wardenci, 2014), the electroanalytical capacity of the S-CPE electrodes to monitor grape maturation was evaluated using Partial Least Squares-Discriminant Analysis (PLS-DA) and Principal Component Analysis (PCA). PCA loading plot showed that M-CPE, PP-CPE and JG-CPE prepared in S1 (just one week after véraison), appeared in similar areas of the diagram (Fig. 4)....

[Show abstract](#) ✓[Organoleptic analysis of drinkingwater using an electronic tongue based on electrochemical microsensors](#)

2019, Sensors (Switzerland)

[Overview of electronic tongue sensing in environmental aqueous matrices: Potential for monitoring emerging organic contaminants](#)

2019, Environmental Reviews

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