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ANALYTICAL MICROSYSTEM FOR THE SPECTROPHOTOMETRIC DETERMINATION OF TITRATABLE ACIDITY IN WINES

Natalia Sandez¹, Antonio Calvo-López¹, Susana S. M. P. Vidigal², Julian Alonso-Chamarro¹, António O. S. S. Rangel²

¹*Universitat Autònoma Barcelona, Group of Sensors & Biosensors GSB, Departament de Química, Edifici Cn, Bellaterra 08193, Catalonia, Spain*

²*Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Arquitecto Lobão Vital 172, 4200-374 Porto, Portugal
svidigal@porto.ucp.pt*

Wine is a product of the yeast fermentation of the naturally present sugars in grape juice [1]. The chemical composition of wine is very variable and complex. The acidic compounds, besides the effect that they can have in the colour, the taste and the stability of finished wines, are responsible for keeping the wine microbiologically and chemically stable. Therefore, the determination of titratable acidity in wine has become a routine procedure determining wine character and quality [2].

In this context, a microfluidic flow-based system has been developed for the automation of a methodology for the determination of titratable acidity in wine. In the proposed system, a precise volume of sample is mixed with a buffered bromothymol blue (BTB) solution, leading to a change on the absorbance of the solution. This change in absorbance can be monitored at 607 nm by a home-made miniaturized optical detection system, and it can be related with the titratable acidity of the sample.

The hydrodynamic conditions for the microsystem were evaluated and optimized, and the system was used for the determination of the titratable acidity of different wine samples with less than 5% error when compared to the official analysis method of the Association of Official Analytical Chemists [3].

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[1] Amerine, M. A.; Ough, C. S. *Methods for Analysis of Musts and Wines* **1974**, Wiley, New York.

[2] R. S. Jackson, *Wine Science* **2000**, Academic Press, California, USA.

[3] *Official Methods of Analysis of AOAC INTERNATIONAL* **2012**, 19th Ed., AOAC INTERNATIONAL, Gaithersburg, USA.