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Prémios “Distinção CNOIV” 2020

Atribuídos nas áreas:

1- Viticultura
2- Economia e Direito
3- Enologia

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1 Prémios Distinção CNOIV Viticultura

- ✓ "Elucidário de Termos Vitícolas Portugueses e Vernáculos“
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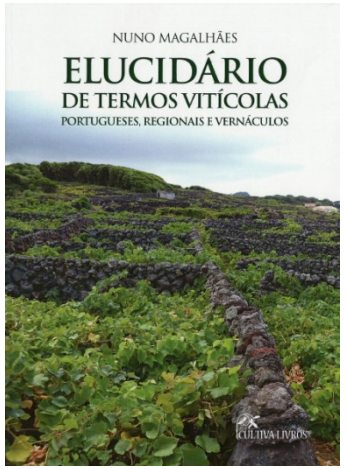
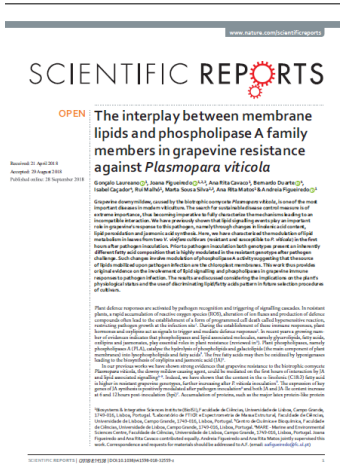
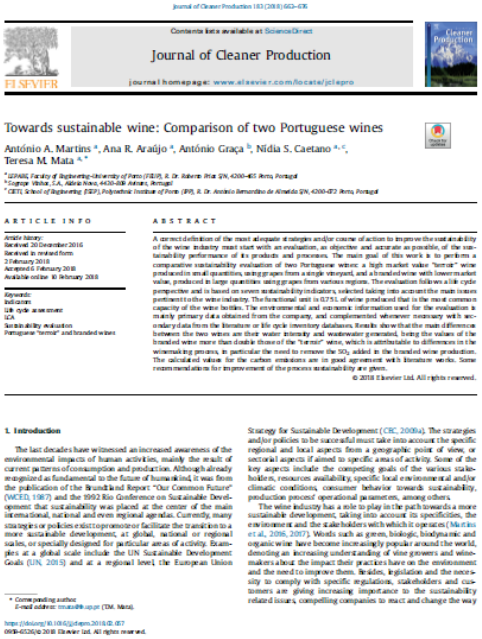


- ✓ Artigo científico publicado em 2018 na revista científica Scientific Reports, Nature Publishing Group: “The interplay between membrane lipids and phospholipase A family members in grapevine resistance against Plasmopara viticola” de um coletivo de autores representado por Andreia Mata Figueiredo



2 Prémio Distinção CNOIV Economia e Direito

- ✓ **Artigo científico publicado em 2018 no Elsevier Journal :"Towards Sustainable wine: Comparison of two Portuguese Wines" de um coletivo de autores representado por Teresa Mata.**



Journal of Cleaner Production 183 (2018) 662–673

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Towards sustainable wine: Comparison of two Portuguese wines

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ARTICLE INFO

ABSTRACT

1. Introduction

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3 Prémios Distinção CNOIV Enologia


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Label free DNA-based optical biosensor as a potential system for wine authenticity

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ABSTRACT

The diversity found among the *Vitis vinifera* L. species allows the production of wines with very different characteristics. The development of platforms suitable for food composition analysis is currently an emerging area. Among these, DNA biosensors have been developed for a wide variety of applications, ranging from food safety to authenticity. The main aim of this work was to study the detection capacity of the DNA-based optical biosensor using different *V. vinifera* matrices (leaf, must and wine). Genomic DNA was extracted from leaf, must and wine of three *V. vinifera* varieties and was tested on the long-period grating (LPG) DNA-based biosensor developed within our group. The biosensor was able to distinguish the varieties even using DNA extracted from complex matrices, revealing its potential to be applied in wine authenticity.

1. Introduction

The assessment of authenticity in food industry, particularly in added-value food products such as wine, has been a major concern that has challenged scientists to develop reliable and feasible technologies for such purpose (Arvanitoyannis, 2010). Wine quality is deeply influenced by the *Vitis vinifera* L. varieties used in winemaking, and therefore have a direct impact on wine's market price, particularly in referenced market segments such as Denomination of Origin (DO) wines. For that reason, some of these highly quoted wines are a preferential target for fraudulent practices (Pereira et al., 2012). The misleading addition of other grapevine varieties and/or replacement with other wines is often used as a mean to enhance the sensory characteristics of the final product and/or to decrease its production costs (Catalano, Moreno-Sanz, Lorenzi, & Grando, 2016). Since the incorrect labelling represents a commercial fraud, wine authenticity has become a subject of great concern (Fernandes et al., 2015). Therefore, the precise identification of grapevine varietal composition is one of the key points to combat fraudulent practices and to assure commercial fairness (Pereira et al., 2017).

There is currently a great range of combined techniques that can be used for wine authenticity assessment purposes (Arvanitoyannis, 2010). Nevertheless, DNA-based techniques have been applied in this field mainly due to their ability to correctly fingerprint the grapevine variety throughout the entire wine-chain, while being independent of the growing and production conditions (Fernandes et al., 2015). DNA is much more resistant to industrial processing than other molecules, such as RNA, proteins or secondary metabolites (Corrado, 2016). Thus, DNA-based detection methods are understandably valuable in the differentiation of grapevine varieties used in wine production (Işçi, Kalkan Yildirim, & Altindisli, 2014).

Regarding DNA-based techniques, the use of DNA markers allows the identification of variations in the nucleotide sequence of a genome, that can highlight inter and intra-species/varietal diversity, through their high information potential (Scarano & Rao, 2014). In *Vitis*, the identification of markers, such as single nucleotide polymorphisms (SNPs), for the development of molecular marker-based systems has recently boosted (Tomic, Stajner, & Javornik, 2013). On the other hand, the interest on SNPs as genetic marker for food authenticity has also been highlighted, due to several reasons: (1) their high abundancy in the genome; (2) their genetic stability and; (3) the possibility to be used in the amplification of small DNA fragments and the use of more

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- ✓ Artigo Científico publicado em 2019 no Elsevier journal:"Label free DNA-based optical biosensor as a potencial system for wine authenticity" de um coletivo de autores representado por Paula Lopes.

- ✓ "O Vinho Sentido sem descrever aromas ou atribuir pontuações"

Autores:Virgílio Loureiro e Manuel Malfeito Ferreira.

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