Abstract template

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Phytochemical profiles, antioxidant and cholinesterase inhibition activity of Vitis vinifera L. cv. Aglianico leaf extracts

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Previous reports revealed that grape polyphenol compounds defend against oxidative stress, responsible of various disorders, such as cancer, diabetes and neurodegenerative diseases [1]. Among these, Alzheimer's disease (AD), the most common human neurodegenerative disorder, is a clinical syndrome of dementia and the therapeutic targets for ameliorating the characteristic cholinergic deficit are acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzymes [2]. Therefore, AChE inhibitors, such as galantamine, are the drugs mainly used for the AD pharmacological treatment [1]. The purpose of this research is to analyze the effects that different extraction techniques have shown on the quali-quantitative phenolic profile, on antioxidant and on cholinesterase inhibition activities of *Vitis vinifera* L. (cv. Aglianico) leaf extracts. Leaves of Aglianico were collected in Basilicata Region and the samples were subjected to Soxhlet extraction (SOX), Ultrasound Assisted Extraction (UAE) and Accelerated Solvent Extraction at 40°C (ASE 40) and 50°C (ASE 50). The phenolic profile of extracts were studied by LC-DAD and the method used allowed the identification and quantification of 12 phenolics. The obtained extracts were also subjected to the Total Polyphenols Content (TPC), 2,2-diphenyl-1-picrylhydrazyl (DPPH), Oxygen Radical Absorbance Capacities (ORAC) and *β*-Carotene Bleaching (BCB) *in vitro* assays to evaluate their secondary metabolite content and antioxidant activity [3, 4]. The Relative Antioxidant Capacity Index (RACI) was calculated to compare data obtained by different assays. Moreover the acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) inhibition assays were performed to test their enzymatic inhibition activity [5]. Data demonstrated that the best extraction technique in terms of yield was the Soxhlet method. Further, SOX extract showed the highest RACI value (0.76), followed by ASE 50 extract (0.65). As regards enzymatic inhibitory activity, ASE 50 extract exhibited good AChE inhibitory activity with an IC_{50} of 107.16 ± 8.12 µg/mL. In the BChE assay, instead, SOX extract showed the best BChE inhibitory activity with IC_{50} of 171.34 ± 12.12 µg/mL. In conclusion, our results demonstrated for the first time as Aglianico leaves are important sources of phenolics that could be used to prevent oxidative stress and potentially be helpful in Alzheimer's disease treatment.

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