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Wild Yeast Identification and Wine Production from Grapes of the Local Variety "Vertzami" Grown in Lefkada Island (Ionian Islands, Greece)

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Abstract

The chemical composition of wine is affected by many factors among which grape microbial ecology and the fermentation process.Very few wineries of Lefkada island employ spontaneous fermentation, using wild yeasts found on the grapes, to ensure "local and distinguished bouquet " in their wines. Our aim was to explore the indigenous yeast microbiota of the local red grape variety Vertzami, select indigenous *Saccharomyces cerevisiae* strains and determine the antioxidant activity of the produced wine.In total, 231 yeast strains were isolated from wine lees at the end of spontaneous fermentation and identified via the API 20C AUX system.Alcohol resistance was determined by growing cells onto YEPD plates at 0-17%v/v ethanol. Sulfite tolerance was examined by growing strains in YEPD broth containing 100 mg/L SO_2. Thirty yeast isolates were selected and used in small scale vinifications. The antioxidant activity of each wine product was determined spectrophotometrically (DPPH absorbance at 517 nm).The yeast species identified included *S. cerevisiae* (75.7%), *Candida lusitiniae* (11.3%) and *Candida famata* (9.1%) (3.9% not identified). 78.8% of the yeast strains tolerated 12% ethanol whereas only 22.1% grew at 17%. All *S. cerevisiae* strains were sulfite-resistant whereas all other yeasts were sulfite-intolerant. The thirty wine samples exhibited a mean antioxidant activity of 1.38 mmol Trolox/l. Statistical analysis provided evidence for two distinct clusters A (11 samples) and B (19 samples) with different mean antioxidant activities (1.53 and 1.28 mmol Trolox/l, respectively).The authors acknowledge support from the Operational Programme "Ionian Islands 2014-2020" (Project: MIS 5006342)

Biography:

Dr.Dionysios Koulougliotis is a Professor in the Department of Environment at Ionian University in Zakynthos, Greece.He earned his Bachelors degree in Physics (University of Athens, Greece) and his Masters and Ph.D. degrees in Biophysical Chemistry (Yale University, USA).He has conducted postdoctoral research at the University of Florence (Department of Chemistry), the Max-Volmer Institute for Biophysical Chemistry (TU Berlin) and the Institute of Materials Science in NCSR "Demokritos" (Greece). His current research interests are related with physicochemical properties of foods and science education. He is the author of 32 publications in international peer-review journals.

Speaker Publications:

1.Eriotou, Effimia & Kopsahelis, Nikolaos & Lappa, Iliada & Alimpoumpa, Dimitra & Diamanti, Vasiliki & Koulougliotis, Dionysios. (2020). Identification of Indigenous Yeast Strains from Spontaneous Vinification of Grapes from the Red Variety Avgoustiatis Zakynthou (Ionian Islands, Greece) and Antioxidant Activity of the Produced Wine Open Access. Journal of Food Chemistry & Nanotechnology.6. 10.17756/jfcn.2020-083.

2. Kampioti, Adamantia & Kolokotsa, Anastasia & Konidari, Asimina & Toki, Christina & Koulougliotis, Dionysios. (2018). QUALITY OF WATER IN SENSITIVE ISLAND ECOSYSTEMS: THE CASE OF ZAKYNTHOS ISLAND.

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