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10-15 July 2023
Târgu Mureș, Romania

BOOK OF ABSTRACTS

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DETERMINATION OF TOTAL PHENOLS, ANTHOCYANINS AND COLOR PARAMETERS OF VRANEC WINES

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Introduction and objectives: In this study, total phenols (TP), total anthocyanins (TA) and colour parameters of Vitis Vinifera red wines Vranec from vintage 2022, produced in the Republic of N. Macedonia, have been evaluated. The wines have been produced with three different fermenters, including classic fermenter, roto fermenter and punch-down fermenter, in order to study and compare the effect of vinification on phenolic composition.

Materials and methods: Total phenols were determined using the Folin-Ciocalteu methot at 765 nm and expressed as gallic acid equivalent (GAE, mg/l). Determination of the total anthocyanins was realized by the method proposed by Di Stefano. For calculation of colour intensity (CI) and hue (H), wine absorbance was measured at 420 nm, 520 nm and 620 nm.

Result and discussion: Vinification technique had an influence of the phenolic content of wines, observing highest content of TP and TA in Vranec wines produced with roto fermenter (TP: 3222 mg/L, TA: 820 mg/L) in comparison to Vranec wines produced with punch-down fermenter (TP: 2987 mg/L, TA: 742 mg/L) and classic fermenter (TP: 2350 mg/L, TA: 572 mg/L). In addition, the values for CI and H were the highest in Vranec wines produced with the roto process of fermentation.

Conclusion: Wines produced with roto fermenters presented highest content of total phenols, anthocyanins, colour intensity and hue, confirming that this fermentation technique is the most suitable for production of stable and complex wines rich in polyphenols.

Keywords: total phenols, anthocianins, Vranec wines, fermenters, spectrophotometry

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PHOTOCATALYTIC DEGRADATION OF DRUG IN ENVIRONMENTAL SAMPLES

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Aquatic pollution caused by a great number of pharmaceutical compounds is an environmental problem that became an important public health issue over the last years. Pharmaceuticals such as antibiotics, analgetics, estrogens, anti-inflammatory and antiepileptic drugs are detected in surface waters, groundwater or drinking water. Many of these compounds are resistant to degradation and may remain in the environment over a long time to cause the potential adverse effects.

Conventional biological and chemical treatments are not effective for resistant pharmaceuticals and incompletely treated effluents from sewage plants are released into natural waters. Therefore, it is important to develop effective techniques to treat these pollutants.

In recent years, advanced oxidation processes (AOPs) are the most developed for non-biodegradable, chemically stable, and persistent pharmaceuticals degradation. In these AOPs processes, oxidation reactions are carried out using generated highly reactive oxygen species.

Among AOPs, heterogenous photocatalysis is found to be one of the most efficient methods to degrade pharmaceuticals. The mechanism of photocatalytic oxidation process is based on application semiconducting photocatalyst to initiate the formation of reactive oxygen species.

In this presentation application of advanced oxidation processes, including photocatalytic degradation of pharmaceutical active compounds in environmental samples will be discussed.

Keywords: advanced oxidation processes; photocatalytic degradation; environmental samples