

RETENTION OF WINE POLLUTANTS ON CHEMICALLY MODIFIED CLAYS WITH DENDRIMERS

Andreea HORTOLOMEU^{1*}
Diana-Carmen MIRILA¹
Mohamed Amine DIDI²
Rodica STURZA³
Yuri SCUTARU³
Ileana-Denisa NISTOR¹

¹Laboratory of Catalysis and Microporous Materials, Department of Environmental Engineering, Faculty of Engineering, "Vasile Alecsandri" University of Bacau

²Laboratory of Separation and Purification Technologies, Department of Chemistry, Faculty of Sciences, University Abou Bekr Belkaid of Tlemcen, Algeria

³Department of Oenology and Chemistry, Faculty of Food Technology, Technical University of Moldova, Chisinau, Republic of Moldova

*Corresponding author: Andreea Hortolomeu, hortolomeuandreea@gmail.com

According to the specialized literature, it was found that of the variety of PAEs, the most common in both wine and other food products are di-ethylhexyl phthalate (DEHP) and di-butyl phthalate (DBP). These, if they reach the food chain, significantly affect the health of the consumer. In their 99% purified form, PAEs are viscous, transparent, low-volatile, colorless, odorless, hydrophobic organic liquids under normal conditions, insoluble in water, and have a high affinity for alcoholic solutions. The daily intake of PAEs tolerated and established by the European Food Safety Authority (EFSA) is: 50 $\mu\text{g}\cdot\text{kg}^{-1}$ bw for DEHP and 10 $\mu\text{g}\cdot\text{kg}^{-1}$ bw for DBP. The most common method for identifying and quantifying low concentrations of phthalates in alcoholic beverages is gas chromatography coupled to mass spectrometry (GC-MS). The purpose of this paper is to highlight the effect of chemically modified clays with dendrimers. The natural clay impregnated with dendrimers was used in several series of tests, with the aim of presenting their capacity regarding the retention of pollutant compounds, the effect on protein stability, the nephelometric degree and the level of polyphenolic compounds of an autochthonous white wine Aligote (before and after treatment with the modified sorbents). In order to correctly evaluate the effect of the chemically modified material, natural clay was also tested. After performing the protein stability test, it was observed that the protein level in the contaminated wine decreased more after its treatment with the bentonite modified with third and fourth generation of Boltorn dendrimers. This effect is more pronounced at volumes of 250-500 μL of sorbent used for 15 mL of white wine samples. This statement is reinforced by the results of nephelometric analyses. For the phthalic content in Aligote wine, positive results were found after treatment with natural bentonite and the one modified with dendrimers of the second generation, followed by the one impregnated with Boltorn of the fourth generation. In conclusion, it can be mentioned that natural bentonite impregnated with dendritic polymers shows promising results for the absorption of protein compounds from wine and at the same time they have the ability to retain a large volume of polymeric pollutants with a complex structure such as phthalates.

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