

## **Abstract**

When present in high concentrations in red wine, 4-ethylphenol (4-EP) and 4-ethylguaiacol (4-EG) are responsible for the introduction of unpleasant aromas, which causes wine depreciation. The work presented concerns the performance of textural and chemical-modified activated carbons (ACs), produced from coconuts shells, in the treatment of spoiled wines. ACs were submitted to basic and acid treatment, by impregnation into solutions containing NaOH and HNO<sub>3</sub>, respectively. Modified ACs showed only a small, but noticeable, increase in apparent surface area and micropore volume when compared to the original AC. However, the surface chemistry underwent significant changes. The ability of modified ACs to remove 4-EP and 4-EG, which cause the off-flavor known as "Brett character," from wine-like solutions has been successfully achieved. On the systems studied, 4-EG was retained in greater extension, but 4-EP was retained more strongly on the surface of the ACs. Ethanol was found to compete with 4-EP and 4-EG for the adsorptive centres. However, when 4-EP and 4-EG were present in the same solution, the addition of ethanol promoted a cooperative effect and favoured the adsorption of both compounds. It should be noted that the modified ACs were able to eliminate 4-EP and 4-EG to levels below their sensory perception thresholds referred for red wine.