Effect of Various Treatments and Filtration Methods on Eliminating Residues of Casein-based Fining Agents from Wine

Abstract:
Milk-based fining materials that are used during winemaking may trigger allergic reactions. If they are present in the final product and depending on a country’s legislation, these substances may have to be declared on the wine label. This labeling helps consumers with allergies avoid wines that may trigger their allergic symptoms. This study investigated the utility of several procedures for removing allergenic residues remaining in wine after the use of milk protein-containing fining agents. Winemaking practices are different depending on country and areas, and because of these different standards, a fining trial was conducted to study the efficiency of various filtration methods and of other treatments for reducing the levels of milk-derived allergens, even in a worst-case scenario involving the use of high amounts of fining agents. ELISA was used to detect milk proteins in wine, and in vivo allergy tests were also conducted. All filtration methods used in this study removed casein from both red and white wines to levels undetectable by the ELISA. Other removal methods evaluated in this study were equally efficient, apart from flash pasteurization or silica sol, when a large amount of casein was applied. However, an additional sterile filtration after flash pasteurization or silica sol fining decreased casein proteins to undetectable levels as well.