

Influence of oenological processes and product qualities on the compositional profiles of biogenic amines of sparkling wines

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Biogenic amines (BAs) are low molecular nitrogenous compounds especially abundant in fermented foodstuff such as wine and cheese as well as in spoiled products. BAs are bioactive compounds that can cause toxicological problems —e.g. migraine, hypertension, rash, etc.— when ingested in high amounts. Contents of BAs in wines may depend on different factors such as fermentation processes and other oenological practices as well as on grape quality.

This work aims at assessing the evolution of biogenic amines during the manufacturing process of sparkling wines by analysing samples of must, base wines, stabilized wines and 3-month and 7-month aged sparkling wines obtained from Pinot Noir and Xarel·lo grape varieties. In addition, the effect of grape quality was also evaluated. The determination of BA contents relies on liquid chromatography with fluorescence detection (HPLC-FLD) with precolumn derivatization of analytes with dansyl chloride. Principal component analysis has been applied to try to extract featured information concerning overall patterns dealing with wine production steps and qualities. The analysis has shown that putrescine is the most abundant amine in this type of samples. Ethanolamine, tyramine, cadaverine and histamine concentrations are also remarkable.

Regarding BA formation, their concentrations are quite low in musts but especially rise after the first alcoholic fermentation. Besides, BA levels are smaller in the products elaborated with grapes of the best qualities while significantly increase when using grapes of lower qualities.