Introduction

Among pre-harvest parameters, the ripening state is a major factor determining the final aroma quality of the harvested fruit. Little works have addressed the analysis of aromatic compounds in cherry cultivars, which means that the number and nature of the odorants responsible for their aroma is not fully understood yet. Studies carried out on cherry cultivars cultivated in Spain have mainly focused on the physico-chemical and sensory characterization of the fruits, but not on their aroma.

Objectives

1. Monitoring how the odour of cherries is influenced by the ripening stage, in order to check the eventual aromatic potential of cherries discarded for the fresh fruit market which are destined to juices
2. Early Bigi cultivar as a case study due to the commercial importance in Aragon

Materials and Methods

The volatile compounds of Early bigi cherries from three ripening states were extracted by SPME and analyzed by gas-chromatography-olfactometry. Juice from cherries of the low and high ripening degrees was elaborated by pre-centrifugation before clarification and fining and submitted to descriptive sensory analysis by a panel of trained tasters.

Results

Cherry volatile profile is deeply influenced by the maturity degree, in terms of both the number and the chemical nature of odor volatiles.

As a general rule, low ripening degrees imply the presence of low volatile compounds (mainly ethyl esters) whose concentration decreases as maturity stage advances.

Sensory data evidences the correlation between the “green/grass” note and the perception of the “characteristic cherry aroma”.

Aldehydes exhibiting “green-like” odors (hexanal, Z-3-hexenal and E-2-hexenal) are much clearly perceived in the high ripened cherries. This could be explained by the complex balance established among the molecules implied in the aroma.

Conclusions

• The olfactometric profile of Early Bigi cherry is mainly conformed by chemical compounds from the aldehydes family evoking “green” and “grass” odours.
• The different volatile profiles present in the juice are clearly expressed on the sensory properties of the juice. The olfactometric monitoring allows, therefore, estimating the aromatic potential of the fruit and its sensory implication.
• Knowledge of the specific aromatic potential of cherries discarded to be commercialized as a fresh product is valuable information for manufacturers. Correlation studies between GC-O and sensory data can be a useful technique to predict the aroma properties of novel juice formulations prior to be launched on the market.