“Artificial Sensory Analysis” for Sensory Classification of Prosecco Sparkling Wines

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INTRODUCTION AND PURPOSE

Real-time reference to a consolidated standard during sparkling wine production would be beneficial for reducing product loss and/or allowing a timely diagnosis of intervention needs (correction etc).

This study has been carried out to assess whether the responses of an “electronic nose” (Libra Nose, Fig. 1), i.e. a non-specific gas-phase analytical instrument, permit to draw an outline of the sensory profile of Conegliano Valdobbiadene Prosecco Superiore DOCG and of Prosecco DOC in a way that is objectively repeatable and that can be simply related to the judgment of a group of expert assayers.

MATERIALS AND METHODS

The analysed samples were supplied anonymously by the ValoriItalia, the body in charge of assigning DOC and DOCG certifications for Prosecco wines based on their sensory identity. The following type of samples were analysed:

I. Conegliano Valdobbiadene Prosecco Superiore DOCG and Prosecco DOC deemed APPROVED

II. Conegliano Valdobbiadene Prosecco Superiore DOCG and Prosecco DOC deemed REASSESSABLE

The analyses were carried out in a stream of nitrogen, which was used both as a carrier gas, brushing the free surface of the sample in an erlenmeyer flask, and as the reference substance (Figg. 2,3).

The responses of the 8 e-nose sensors (micro-balances), together with 4 variables of the chemical analysis related to the condition of the gas phase in contact with the product, have undergone time filtering, blank reference, outlier elimination, standardisation and classification analysis, this latter in non supervised (2- and 3-component PCA) and supervised (LDA, 2- and 3- component PLS) manner.

Overall, 116 independent samples (61 DOCG e 55 DOC) have been analysed.

RESULTS AND DISCUSSION

The data were processed in two ways: in a single cluster including all the available samples and separately for Conegliano Valdobbiadene Prosecco Superiore DOCG and Prosecco DOC samples.

To date the available data set is classified at best between APPROVED (compliant) and REASSESSABLE (non-compliant) by using LDA; indeed, non compliant samples can be separated for both denominations. The other applied classification methods, PCA and PLS, were able to appreciably discriminate only the samples belonging to Conegliano Valdobbiadene Prosecco Superiore DOCG.

CONCLUSIONS

The electronic nose and some routine analytical data permit the fast classification of cases of non compliance without the intervention of an expert assayer for Conegliano Valdobbiadene Prosecco Superiore DOCG wines. The generalisation of this result to Prosecco DOC wines requires further research and a higher number of non compliant samples. The discrimination capacity in a winery may be expected to be even higher, given that the samples that reach the Commission already passed the assay at the producer’s site.

THANKS

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