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## Use of Fourier Transform Infrared Spectroscopy to create models forecasting the tartaric stability of wines

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### Abstract

Tartaric instability of wines still represents a serious problem in terms of the commercial value of bottled wines, particularly whites, leading consumers to be suspicious as regards the effective healthiness or wholesomeness of products. The study, carried out on 536 Italian wines, investigated the potential of using Fourier Transform Infrared Spectroscopy, distinguishing between white and red/rosé wines, to create models predicting the instability of wines, assessed in comparison to two of the most widespread methods of reference: the “mini-contact test” (10 min, 0°C, KHT) and the “cooling test” (5 days, -4°C). The models proposed, constructed using 80% of the samples and based on Partial Least Squares-Regression and Artificial Neural Networks, were shown to work well in terms of correct classification (from 89 to 97%) of the external validation subset (20%). As regards the more problematical question of technical management of wines before bottling, in the worst cases only 4-6% of unstable samples were erroneously classified as stable.

**Keywords:** wine; tartaric stability; FT-IR; PLS regression; Automated Neural Networks

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