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Detection of some wine flaws with rapid correlative analytical methods – preliminary results

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With the increasing demand for high-quality wines there is a need for instrumental analytical methods to test and monitor the quality in large quantities. The correlative analytical methods offer alternative solutions of the traditional human sensory tests and classical analytical approaches. With these novel methods special quality characteristics can be tested rapidly and with good accuracy, giving the opportunity for early detection of the appearance of some defects causing wine faults and flaws. In our development, wines with artificially produced flaws were examined using near-infrared (NIR) spectroscopy and electronic nose technology based on ultrafast gas chromatography. The acetic acid, typical for 'volatile acidity', was used in a concentration-range of 0.25 - 1 g/l, and the 4-ethylphenol (4EP) and 4-ethylguaiacol (4EG), which cause the barn smell characteristic of 'Brett' wine, were used in a concentration-range of 0.2 - 8 mg/l, matching the human sensory thresholds. With NIR spectroscopy, 4EP and 4EG proved to be poorly estimable, however, accurate results ($R^2 > 0.9$) were obtained for acetic acid. The applied electronic nose was not suitable for the detection of acetic acid, however, higher concentrations of 4EP and 4EG (> 1 mg/l) were detectable. To be able to measure lower concentrations (< 1 mg/l), various sample preparations were used, with which the dissolved volatile compounds were released, helping to extend the detectability.

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Antibiotic residue in raw milk collected from collection points and marketplaces in Peja region

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Antibiotic residues in milk are well known to be a major public health concern worldwide. This study's objective was to assess the presence of antibiotic residue in fresh, raw, unpasteurized milk randomly obtained from marketplaces and collection points. The study was carried out in the Peja region between August 2020 and May 2021. We collected 264 milk samples during this period. All milk samples were analyzed using the Charm MRL beta-lactam and tetracycline rapid test. From 264 milk samples in total, 249 were negative, and 15 samples were positive. Out of the positive samples, six originated from collection points and nine from marketplaces. Five of the six positive samples from the collection points had beta-lactam antibiotic residue, and one sample was tetracycline positive. Seven of milk samples from marketplaces were tested positive for beta-lactam antibiotic residues and two milk samples containing tetracycline residues. The findings of this study, although preliminary, still highlight the problem of antibiotic residue from raw milk samples in Peja region.