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DETERMINATION OF POLYPHENOLIC COMPOUNDS IN MURFATLAR WINES BY VALIDATED SPECTROPHOTOMETRIC METHOD

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Abstract

Simple, cost effective, accurate and reproducible UV-spectrometric method was developed and validated in order to estimate total polyphenolics content (TPC) of some Romanian red and white wines. Furthermore, the total flavonoids and nonflavonoids of the wines were also determined. The TPC has been measured using the Folin-Ciocalteu method, which was tested and validated for various parameters: specificity and selectivity, precision, accuracy, detection and quantization limits and linearity. The calibration curve was linear in a concentration range of 100 – 1000 mg GAE/L (gallic acid equivalents). Experimental limits of detection and quantification were 46.68 and 143.31 mg GAE/L respectively, and recovery was calculated (97.15 – 102.06%). Precision was determined by studying the repeatability and intermediate precision and was successfully demonstrated by achieving %RSD of 1.0-3.5% for replicate determinations of standard solution and real samples. The proposed analytical method was successfully applied to analyze red and white wines from Murfatlar Vineyard, Romania vintage 2007. The determined TPC ranged from 364 mg GAE/L Columna (white wine), to 2124 mg GAE/L Cabernet Sauvignon (red wine). The highest total flavonoids and nonflavonoids content was encountered in Cabernet Sauvignon wine (202 mg GAE/L, respectively 1922 mg GAE/L). The lowest total flavonoids and nonflavonoids content was found in white wines: Columna - 48.9 mg GAE/L, respectively Pinot gris - 295 mg GAE/L.

Key words: flavonoids, Folin-Ciocalteu reagent, method validation, Murfatlar wines, nonflavonoids, total polyphenolic compounds content

Received: November, 2011; Revised final: October, 2012; Accepted: November, 2012

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