RAPID DETERMINATION OF PHENOLIC COMPOUNDS IN RED WINE USING VIS/NIR SPECTROSCOPY ASSOCIATED WITH THE DESIR METHOD FOR SAMPLE PREPARATION

BARRETO[1], N.S.; CARVALHO[2], E.S.S; CORREA[3], L. C;
MARQUES[4],E. J. N.; FREITAS[5], S. T.;MARQUES[6], A. T. B.

[1]Universidade Federal de Sergipe – Sergipe. naianebarreto.if@hotmail.com
[2] Rede Nordeste de Biotecnologia – Bahia. erikasamantha2@hotmail.com
[3] Empresa Brasileira de Pesquisa Agropecuária - Pernambuco. claudio.correa@embrapa.br
[4] Empresa Brasileira de Pesquisa Agropecuária - Pernambuco. emanueljn@gmail.com
[5] Empresa Brasileira de Pesquisa Agropecuária - Pernambuco. sergio.freitas@embrapa.br
[5] Empresa Brasileira de Pesquisa Agropecuária - Pernambuco. aline.biasoto@embrapa.br

Key-words: Bioactive compounds; Green chemistry; Sustainability

Visible and near infrared spectroscopy (Vis/NIR) is an analytical technique that has been proposed for the evaluation of wine quality due to the fact that it is fast, non-destructive, as well as it does not require sample preparation or chemical reagents. However, low sensitivity has limited the use of this technique to determine compounds present in the wine at low concentrations, as it is the case for phenolic compounds that are usually present at concentrations lower than 0.1%. One possible solution to this limitation is to use the Dry Extract System for Infrared (DESIR) method. In this method, the liquid sample is dried over a solid substrate (fiberglass filter) that has low interaction with the NIR radiation. Drying leads to the concentration of the compounds present in the sample, which can increase method precision. The objective of this study was to compare the predictive performance of multivariate calibration models developed from spectral data obtained with liquid samples, without any previous preparation, or with dry samples obtained through the DESIR technique to determined compounds present in red wine at low concentrations. A total of 48 samples of 'Touriga Nacional' red wine (*Vitis vinifera L*) were used in our study. The spectra were recorded using the portable F-750 Produce Quality Meter Vis/NIR spectrometer (Felix Instruments, Portland, USA). Calibration models were developed by Partial Least Squares (PLS) regression for caffeic acid, isohramnetin, (-)-gallate epicatechin, malvidin-3-O-glucoside and trans-resveratrol. The results show that there was no difference between models developed from spectral data obtained with liquid samples or with dry samples. The R^2 values ranged from 0.40 to 0.60; and the relative RMSECV ranged from 10.8 to 35.6% for the compounds studied. According to the results, both liquid and dry sample approaches lead to the same NIR model performance.

Financial support: INCTAA (CNPq 465768/2014-8) and FACEPE (BFP 0130-5.01/17)