Title The concentration of *trans*-lycopene in postharvest watermelon: An evaluation of analytical data obtained by *direct* methods

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Abstract

The performance of the newly proposed laser-based optothermal window (OW) method and colorimetry for quantification of *trans*-lycopene in 10 watermelon homogenates has been evaluated. Reverse phase HPLC served as an established reference method. Both, OW and colorimetry are *direct* methods as they, contrary to the HPLC, obviate the need for extraction, which leaves homogenization of the sample as the only preparatory step prior to the analysis itself. The evaluation of analytical performance of each method leads to the conclusion that the OW method and colorimetry are both suitable for quick screening of the *trans*-lycopene concentration of red-fleshed watermelon homogenates. Linear correlation is highest ($R = 0.917$) for the laser-based OW method. This detection concept offers an additional but very unique advantage. By virtue of the operational principle of the OW method, it is possible to avoid the effect of saturation, a phenomenon known to cause difficulties when interpreting data collected by other analytical methods.