

Title Application of near infrared spectroscopy for the quantification of quality parameters in selected vegetables and essential oil plants

Author H. Schulz, H.-H. Drews, R. Quilitzsch and H. Krüger

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Abstract

The use of near-infrared (NIR) spectroscopy for the prediction of the essential oil content and composition in various umbelliferae genotypes was investigated. Furthermore an NIR method was developed for the quantification of total carotenoids and sugars present in different carrot varieties. Applying partial least square algorithm very good calibration statistics ($SECV$, R^2) were obtained for the prediction of the essential oil content in fennel (0.47, 0.83), caraway (0.29, 0.93), dill (0.30, 0.96) and coriander (0.29, 0.93). Satisfactory calibration results were received for the NIR determination of total carotenoids (1.54, 0.80) and of saccharose (0.74, 0.76) in carrots. The performed study demonstrates that NIR can be used to rapidly and accurately predict secondary metabolites such as carotenoids, anethole, fenchone, estragole, limonene and carvone occurring in vegetables and in fruits of various essential oil plants.