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PROPERTIES OF MEDICAL PLANTS RELATED TO NIR SPECTROSCOPY

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Medical plants as a source of bioactive components are investigated as medicinal plant extracts. A range of spectrophotometric, conductivity, near infrared spectroscopy and chemometric analyses were undertaken as a mean of determining the bioactive quality of 6 widely spread medicinal plant extracts from botanically distinct origins (Lemon balm, Sage, Lavender, Garden Thyme, St. John's wort and Marigold). Spectrophotometric determination of polyphenols and antioxidant capacity was performed. To determine the antioxidant capacity, two methods were used, the broadly used DPPH method and the Briggs-Rauscher method. BR method is performed at pH 2, which is similar to that of the fluids of the main digestive process (human stomach), giving in vitro information on antioxidant activity under "real digestion conditions". Conductivity and total dissolved solids and a NIR spectrum (NIRs) record for each medical plant extract were recorded. Chemometric techniques were used to establish the relationship between a technological method, as NIR spectroscopy, that was coupled with all determined, analytical parameters (total phenols, antioxidant capacity, conductivity and TDS). Partial least squares regression (PLSR) was used to evaluate the relationship between NIRs and bioactive and conductivity properties of medical plants to be able to predict the properties based on the NIR spectra of the medical plant extracts. The results showed high correlation confirming the suitability of NIR analysis for determination and quantification (RPD>3) of polyphenols, antioxidant capacity, conductivity and TDS in medicinal plant extracts.

Biography

Jasenka Gajdoš Kljusurić has been Graduated, finished her Master's degree and Doctorate at the Faculty of Food Technology and Biotechnology/University of Zagreb. She graduated the MBA program in the field of Agribusiness (ICA). Application of different measuring and modelling methods in fields as Nutrition, Food Science and Food Technology are the topics she investigated in more than 60 published scientific papers. Presently she has been working at the University of Zagreb in Croatia where she teaches Modeling and optimization in nutrition and the basis of measurement methods in food science.

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