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ANALYTICAL APPLICATIONS OF NEW PORTABLE NEAR INFRARED (NIR) SPECTROMETER SYSTEM

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A compact and handheld near infrared (NIR) system using microspectrometer was developed. This system was suitable not only in the laboratory, but also in the field or in the process. This system was first applied for classification of geographical origin of herbal medicine such as ginseng and sesame. To identify the origin of ginseng on site, the portable NIR system is more suitable for real field application. For this study, using the compact NIR system, soft independent modeling of class analogies (SIMCA) with 1100-1750 nm NIR spectra was utilized for classification of geographical origin (Korea and China) of both ginseng and sesame. The accuracy of results is more than 90%. Quantitative analysis for petroleum such as toluene, benzene, tri-methyl benzene, and ethyl benzene was performed with partial least squares (PLS) regression with NIR 1100-1750 nm spectra. This study showed that the NIR method and gas chromatography (GC), which is a standard method, have good correlations. Furthermore, the ash content of Cornu Cervi Parvum was analyzed and the accuracy was confirmed by the developed compact NIR system.