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## Determination of geographical origin and icariin content of Herba Epimedii using near infrared spectroscopy and chemometrics

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### Abstract:

Near infrared (NIR) spectroscopy coupled with chemometrics was used to discriminate the geographical origin of Herba Epimedii in this work. Four different classification models, namely discriminant analysis (DA), back propagation neural network (BPNN), K-nearest neighbor (KNN), and support vector machine (SVM), were constructed, and their performances in terms of recognition accuracy were compared. The results indicated that the SVM model was superior over the other models in the geographical origin identification of Herba Epimedii. The recognition rates of the optimum SVM model were up to 100% for the calibration set and 94.44% for the prediction set, respectively. In addition, the feasibility of NIR spectroscopy with the CARS-PLSR calibration model in prediction of icariin content of Herba Epimedii was also investigated. The determination coefficient ( $R_p^2$ ) and root-mean-square error (RMSEP) for prediction set were 0.9269 and 0.0480, respectively. It can be concluded that the NIR spectroscopy technique in combination with chemometrics has great potential in determination of geographical origin and icariin content of Herba Epimedii. This study can provide a valuable reference for

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