PhD SEMINAR 2024

JANUARY 14 - 17, 2025 - IBG-2

Development of Non-Destructive Quantification Method for Secondary Metabolites in Holy Basil Based on Hyperspectral Reflectance

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Experimental design and data collection

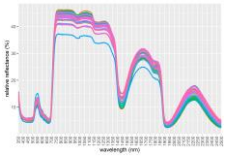
Vegetative

Pre-flowering

Flowering

Harvesting

1. Spectral reflectance measurement by Spectroradiometer (Predictor variable)



2. Eugenol and methyl eugenol quantification by GC-MS (Target variable)

Figure 1. Experimental Design to collect the dataset of spectral reflectance and secondary metabolite content (eugenol and methyl eugenol) from various leaf ages across four developmental stages of two cultivars of holy basil

Modelling

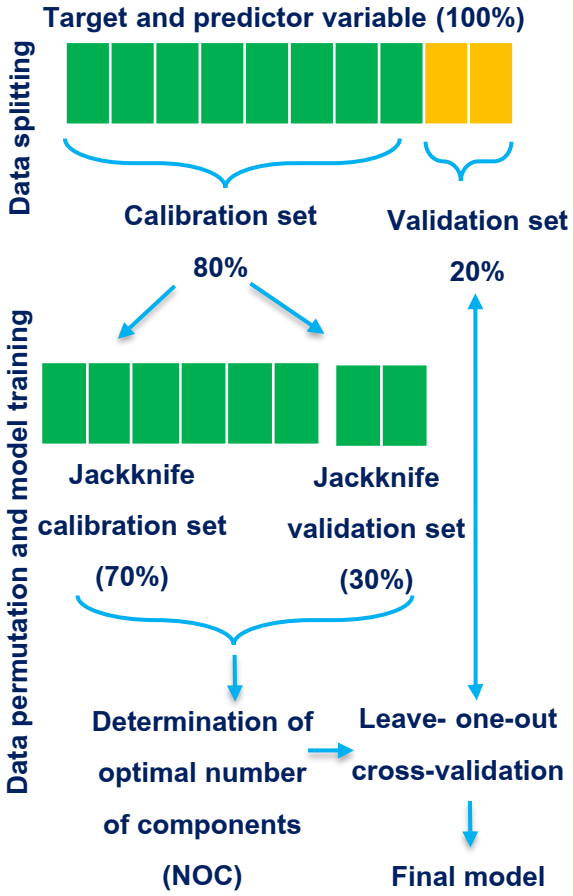


Figure 2. Mathematical modeling for quantifying eugenol and methyl eugenol using Partial Least Square Regression (PLSR) based on spectral reflectance as the predictors

Objective

To establish a mathematical model for quantifying eugenol and methyl eugenol content in holy basil using spectral reflectance data.

Outcome

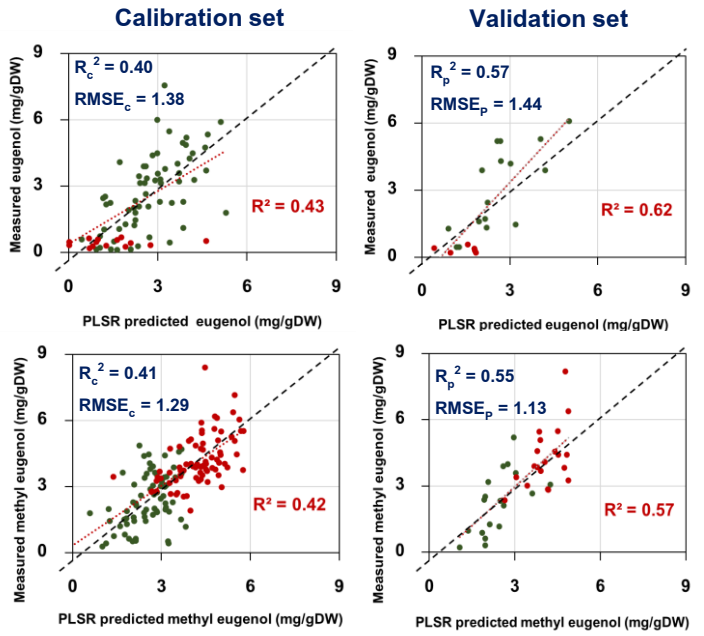


Figure 3. PLSR quantification model performance between measured and predicted eugenol of calibration (N=86) and validation dataset (N=23) and methyl eugenol content between calibration (N=148) and validation dataset (N=38) in holy basil