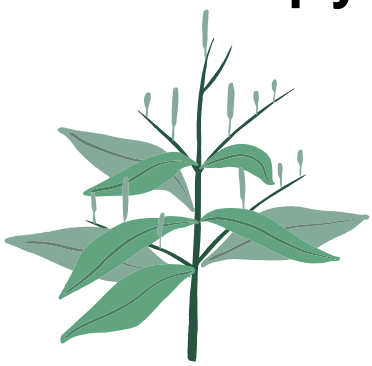
METASPEQ

Near-Infrared Spectroscopy

APPLICATION NOTE

Transforming Herbal Quality Control with AI guided NIR spectroscopy

MetaspeQ near-infrared spectrometers, use proprietary AI/ML technology, **SpectraFind**, a revolutionary approach to estimating andrographolides and grading Andrographis paniculata samples. With an accuracy of 83% in sample classification, NIR-based solutions are scalable and reliable, making them ideal for large-scale herbal medicine production.



AT A GLANCE

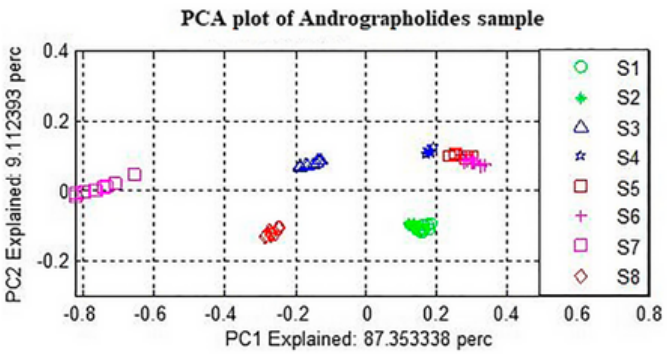
- **Technology**: MetaspeQ™ Near-Infrared Spectroscopy
- **Objective**: Rapid and accurate estimation of andrographolides in **Andrographis paniculata** leaves
- **Industry**: Pharmaceutical & herbal medicine
- **Solution**: NIR spectroscopy combined with Support Vector Machine (SVM) for grading

Challenges

- Time-consuming sample preparation process.
- Requires expensive solvents and reagents.
- Complex and labor-intensive procedures.

Benefits

- Significant cost savings.
- Drastically reduces analysis time.
- Eliminates need for sample preparation.
- Accurate content quantification achieved.



OBJECTIVES

Estimate Andrographolide Content: Evaluate the concentration of andrographolides, the active therapeutic compounds in Andrographis paniculata, using NIR spectroscopy.

Grading of Andrographis paniculata: Grade samples into three categories—high, medium, and low—based on andrographolide content, using a Support Vector Machine (SVM) algorithm for classification based on SpectraFind™ chemometric models.

SOLUTIONS

Advanced NIR Spectroscopy for Quinine Analysis- Metaspeq™ NIR technology offers a non-invasive and rapid method for estimating quinine content in the concentration of andrographolides in dried leaf samples and extracts.
AI-Powered Chemometric Analysis: The model classifies samples into high, medium, and low grades. The classification was based on spectral fingerprints and resulted in an 83% average accuracy with tenfold cross-validation.
Improved Cost-Efficiency and Speed-NIR spectroscopy offers a faster, equally reliable alternative, ideal for large-scale quality control.

BENEFITS

Faster Analysis Time: Achieve up to a 90% reduction in analysis time compared to traditional methods, enabling rapid decision-making in quality control processes.
Non-Destructive Testing: Analyze samples allows for the non-invasive analysis of Andrographis paniculata samples, eliminating the need for complex and destructive sample preparation associated with traditional methods.
Cost-Effective Quality Control: Reduce the operational costs by eliminating the need for expensive reagents and solvents. With no need for sample preparation, the overall complexity and cost of testing are significantly lowered.

NEXT-GENERATION QUALITY ANALYSIS