Rapid Analysis of Alpha-glucosidase Inhibitory Activity of *Psychotria Malayana* Jack Leaf Applying Infrared Fingerprinting

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Abstract

The objective of this study was to establish a validated analytical method for the prediction for the *α*-glucosidase inhibitory activity of the leaves of *Psychotria malayana* Jack through implementation of FTIR-fingerprinting utilizing a multivariate statistical calculation, orthogonal partial least square (OPLS). OPLS was accomplished through correlating the bioactivity and infrared spectra of every extract. The 100% methanol extract possessed the highest inhibitory activity against the *α*-glucosidase.

Keywords: *Psychotria malayana*; *α*-glucosidase inhibition; OPLS; IR fingerprint.

Introduction

- DM is one of the complicated & chronic illness.
- *Psychoria* species traditionally used against diabetes but there is no scientific proof. *Psychotria malayana* Jack belongs to Rubiaceae and in Malaysia, it is familiar as “meroyan sakat/salung”.
- The aim is to develop a validated method for *α*-glucosidase inhibition effect of this plant leaves using FT-IR based metabolomics approach.

Methods

***Psychotria malayana* plant leaves**

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Dried at room temperature (25°C) for a week.

↓

course to powder

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Extraction done with sonication for 30 min by immersion in water and methanol at various ratios (0, 25, 50, 75, and 100% v/v) (Javadi et al. 2014).

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The extracts was filtered and recovered using rotary evaporator at 40 °C before freeze-dried to remove any remaining solvents.

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Placed small mass of dried extract directly on the diamond crystal

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FT-IR spectra was collected

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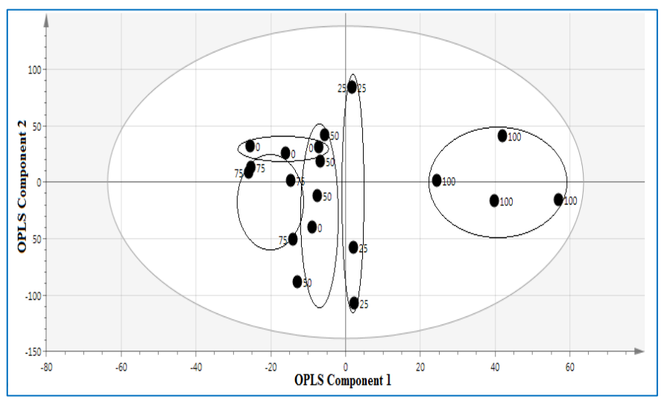
A validated regression model was developed to predict the α-glucosidase inhibitory activity of this plant extract through FT-IR fingerprinting using Multivariate Data Anslysis (MVDA)

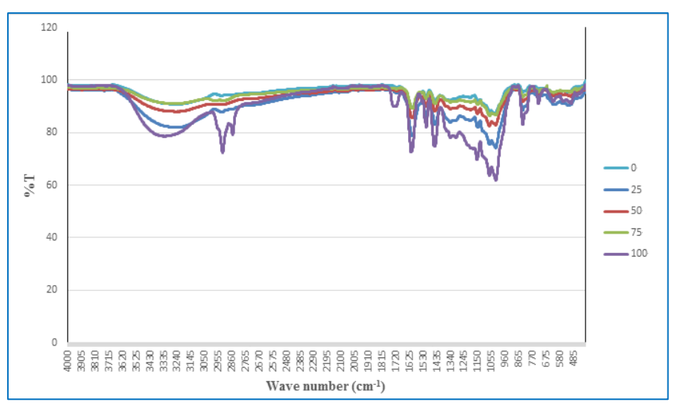
Results

Methanol(%)	IC_{50}
0	7.5
25	5.5
50	7.3
75	10.3
100	2.8

IC_{50}(µg/mL)of plant extracts



MVDA score plot



FT-IR spectrum

Conclusion

The 100% methanol extract possessed the highest inhibitory activity against the *α*-glucosidase. The established validated model can be utilized in predicting the inhibitory activity of new set of *P. malayana* Jack leaves and can also be used as an assessment tool in the quality control of this plant.

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