

Aromatic compounds and organic acids identified from *Ganoderma formosanum* exhibit synergistic anti-melanogenic effects

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Abstract

This study aims to investigate the anti-inflammatory properties of a fermented product of *Ganoderma formosanum* and identify bioactive components. A total of 25 compounds were identified using HPLC and LC–MS/MS. Vanillic acid and 4-hydroxybenzoic acid significantly inhibited nitric oxide (NO) production in LPS-stimulated RAW264.7 cells. The fermented product reduced expression of IL-6 and TNF- α genes and inhibited COX-2 and iNOS proteins. The findings suggest *G. formosanum* fermentation products may be used as anti-inflammatory ingredients.



Winpact Model: FS-05

Introduction

Ganoderma species have been widely studied for their immunomodulatory and anti-inflammatory properties. However, *G. formosanum*, an endemic species in Taiwan, remains less characterized. This study focuses on identifying anti-inflammatory compounds in the fermented product of *G. formosanum* to explore its therapeutic potential.

Materials and Methods

Fermentation was carried out using solid-state fermentation with brown rice as the substrate. *Ganoderma formosanum* was incubated at 25 °C for 30 days. The fermented products were extracted with 95% ethanol and analyzed via HPLC and LC–MS/MS.

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Results

- 25 compounds (20 aromatic, 5 organic acids) were identified in the fermented extract.
- Vanillic acid and 4-hydroxybenzoic acid suppressed NO production in LPS-induced macrophages.
- The extract downregulated IL-6 and TNF- α gene expression.
- Protein levels of COX-2 and iNOS were significantly inhibited.

References

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