發明名稱

（以下內容一頁為限，不可揭露關鍵技術內容；填表完成後請刪除此行）

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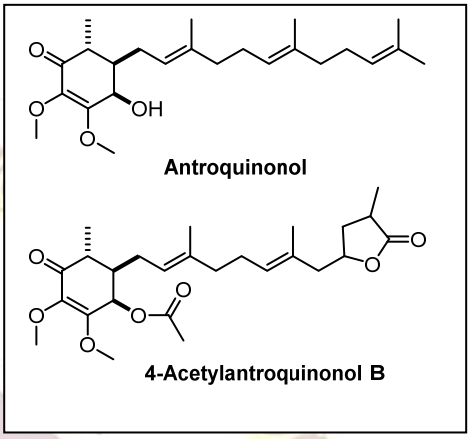
2014–2023 年，台灣生技醫藥 TBF 講座



市場及需求:
牛樟芝(*Antrodia cinnamomea*) 的化學成分 Antroquinonol B, 4-Acetylantroquinonol B 及其他類似化合物 具有多種生物活性，如抗發炎、抗氧化、消除自由基、降肝毒，也可能用於治療癌症、男性不育症、巴金森症和心血管疾病。目前牛樟芝的藥用成分只能從天然物或培養液獲得少量，因此有需要開發其他方法來獲取相當數量的藥用成分。

技術摘要(含成果):
本發明是關於牛樟芝藥用成分的合成方法，包括成分**(IV)**及其中間產物。此合成途徑含有中間產物**(II)** 、 **(III)**，及從化合物 **(I)** 轉換成 **(II)**。

優勢:
本發明提供合成方法以獲取相當數量的牛樟芝藥用成分及中間產物。

競爭產品:
在新近網站接受論文“Synthetic of (+)-antroquinonol possesses dual efficacy for insulin-resistance via triggering AMPK and anti- DPP IV activity” appears as an online accepted paper (British Journal of Pharmacology, 30/06/2014 one-line)，東華大學化學系陳清漂教授簡述合成牛樟芝醌醇的方法，其方法和我們的合成方法完全不同，雖然陳教授沒有揭露其方法之細節，但是引用 Grubbs 反應需要昂貴的釕金屬，可能在大量製備時遭遇困難。我們猜想陳教授也會申請美國專利。

專利現況:
(1)本技術已有相關專利：無。(2)本研究團隊具有數十年研究經驗，發表逾 230 篇學術論文，核准及申請國內外專利逾 20 項，也有技轉產業界。

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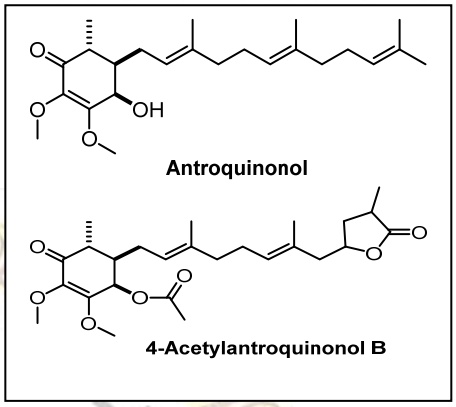
本資料僅供國立臺灣大學專利/技術申請使用，嚴禁使用全部或部分內容於其他用途。若有疑問請與我們聯繫，我們將盡力協助您。

Title of Invention

PI： Prof. Jim-Min Fang
Department of Chemistry, National Taiwan U.



Experience:

Associate Professor (1982–86), Professor (1986–2006), Chairman (1993–96), Distinguished Professor (2006–present), TBF Chair in Biotechnology (Taiwan Bio-Development Foundation, 2014–23), Department of Chemistry, National Taiwan University.

Market Needs:

The chemical constituents Antroquinonol, Antroquinonol B, 4-Acetylantroquinonol B and other analogs of *Antrodia cinnamomea*, a Taiwanese medicinal mushroom 牛樟芝, showed various biological activities, for example, acting as inflammatory agents, antioxidants and free-radical scavengers. These natural products are also applicable to prevention of hepatotoxicity and potentially used in treatment of cancer, male infertility, Parkinsonism and cardiovascular diseases. *A. cinnamomea* active medicinal substances are only obtained in low quantity by isolation from natural source or the culture media of *A. cinnamomea*. Thus, there is a need for an alternative method to obtain these natural products in substantial quantity.

Our Technology:

The present invention relates to methods for the chemical synthesis of *A. cinnamomea* active medicinal substances of formula (**IV**) and intermediates thereto. The synthetic routes involve in key intermediates (**II**) and (**III**). The process includes converting (**I**) to (**II**).

Strength:

The present invention provides methods for the chemical synthesis of *A. cinnamomea* active medicinal substances in substantial quantity.

Competing Products:

An article "Synthetic of (+)-antroquinonol possesses dual efficacy for insulin-resistance via triggering AMPK and anti- DPP IV activity" appears as an online accepted paper (British Journal of Pharmacology, 30/06/2014). Prof. C. Chen (陳清漂教授，東華大學化學系) has briefly reported his synthetic method that is totally different from ours. Though no details of his synthetic method are released, it should involve a Grubbs metathesis requiring expensive ruthenium catalyst that may have problem in the scale-up synthesis. I guess Prof. Chen will also apply USA patent for his invention.

Intellectual Properties:

(1) No related patent has occurred.

(2) Our research team has many years' experience in organic synthesis and drug discovery. We have published more than 230 scientific papers, obtained and applied more than 20 patents, and technology transfer to industries.

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