



# 以酒香酵母之特定酵素生產羅漢果皂苷甜味劑賽門苷 I

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**簡歷：**

[https://www.fst.ntu.edu.tw/zh\\_tw/Facultymembers/Full\\_time/%E7%BE%85-%E7%BF%8A%E7%A6%8E-7271937](https://www.fst.ntu.edu.tw/zh_tw/Facultymembers/Full_time/%E7%BE%85-%E7%BF%8A%E7%A6%8E-7271937)

<http://loyichen.org/biography3177720171.html>

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## 市場及需求：

WHO 自 2016 年建議世界各國以增加飲料中糖稅的方式來減少肥胖的發生，以及消費者對於 clean label 的要求越來越高，因此天然代糖也逐漸受到重視。目前美國 FDA 核准的天然代糖僅止於甜菊糖苷及羅漢果皂苷的萃取物。

現階段食品產業中以甜菊糖苷為主(如 Coca Cola)，羅漢果皂苷雖因具中藥味而受限，但仍有技術改善的空間與市場。

## 技術摘要(含成果)：

本研究團隊藉由篩選不同微生物對羅漢果皂苷水解之能力發現酒香酵母(*Dekkera bruxellensis*)中之特定酵素可生產羅漢果皂苷甜味劑 Siamenoside I，其並為羅漢果皂苷中目前甜度最高之皂苷)。

此研究並指出因原菌株生長速度相當緩慢，因此藉由酵母菌基因工程的方式進行改善，目前可產出兩株具有大量表現此酵素且可快速轉換羅漢果皂苷粗萃物並生成 siamenoside I 之代糖。

## 優勢：

本研究團隊對酵母菌基因工程以及羅漢果皂苷的生物轉換及皂苷分析已持續近十年的研究。目前所發表以酒香酵母之特定酵素生產羅漢果皂苷甜味劑 (Food Chem., 2019)的文獻為唯一一篇找到可產生羅漢果皂苷 Siamenoside I(羅漢果皂苷中目前甜度最高之皂苷)。

## 競爭產品：

目前尚無競爭產品

## 專利現況：

- (1) 中華民國專利及美國專利申請中。
- (2) 本研究團隊對酵母菌基因工程以及羅漢果皂苷的生物轉換及皂苷分析已持續近十年的研究。

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Production of natural sweetener mogroside-Siamenoside I by an unique enzyme from  
*Dekkera bruxellensis*

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**Experience:**

NTU Associate professor

Ph.D. Department of Reproductive and Developmental Sciences, University of Edinburgh, UK

**Market Needs:**

World Health Organization suggested sugary tax is a prominent way to gift obesity. In addition, clean label for food production has been a huge concern for consumers. Thus, the need of natural sweeteners has been increased in the market. Currently US FDA only certified two natural sweeteners- Stevia and Mogroside extracts. Stevia is the dominant natural sweetener. Mogroside market is limited due to the after taste of the extract.

**Our Technology:**

Our team has successfully screened various microbes and their corresponding enzymes which can specifically hydrolyze/bioconvert mogroside and produce siamenoside I (the most sweetest form of mogrosides) . The project was fully supported by MOST. We have identified the unique enzyme from from *Dekkera bruxellensis*. Currently, no other enzymes were claimed to have the unique function to specifically bioconvert Siamenoside I from mogroside extracts (Food Chem.,2019) ° However, the original yeast grows slowly. Thus, we applied genetic engineering to produce yeast strains that can grow fast and produce large amount of protein and bioconvert mogroside V into siamenboside I.

**Strength:**

Our team has been investigating mogroside purification, analysis and yeast/microbial engineering and mogroside bioconversion for more than 10 years. The current publication related to this invention is the only one study that can bioconvert mogroside into siamenoside I from literature search.

**Intellectual Properties:**

- (1)No competitive patents in Taiwan or elsewhere °
- (2) Our team has been investigating mogroside purification, analysis and yeast/microbial engineering and mogroside bioconversion for more than 10 years.

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