

The Value-Added Development of *Lycium chinense* in Miaoli

Ying-Chi Du (杜英齊)^a, Yu-Hsuan Lin (林愉瑄)^a, Chih-Sheng Hung (洪志昇)^a, Win-Chin Chiang (蔣文欽)^a, Chia-Hung Shih (施佳宏)^{b,*}, and Yu-Shan Lin (林妤嫻)^{b,*}

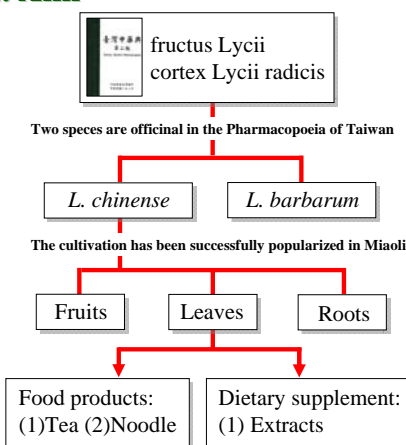
^a Department of Botanicals, Medical and Pharmaceutical Industry Technology and Development Center, New Taipei City 248, Taiwan

^b Section of Crop Improvement, Miaoli District Agricultural Research and Extension Station, Miaoli 36347, Taiwan

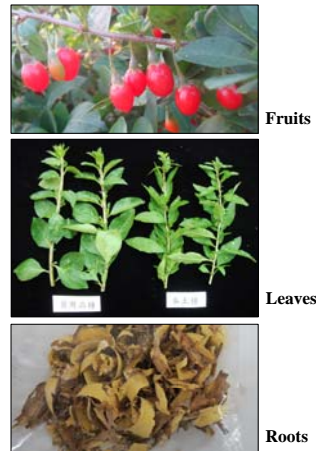
1. Introduction

Goji or wolfberry is a common name given to *Lycium barbarum* and *L. chinense*, two close species with a long tradition of use as medicinal and food plants in China and other Asian countries. The traditional medicine not only uses the berries (fructus Lycii) as a renowned Yin strengthening agent but also the root bark (cortex Lycii radices) as a cooling agent. The utilization of the leaves and the seeds is also mentioned in a few medicinal books. Nowadays, leaves of *L. chinense* are used in tea infusions in the Orient, and considered as a healthful food.

2. Aim



Pictures of *L. chinense*



3. Cultivation of *L. chinense* in Miaoli



To better use the Taiwanese traditional herbal medicine, *L. chinense* was cultivated as a treasured crop by Miaoli District Agricultural Research and Extension Station since 2001.

4. Development of the food products :

After 12 years of effort, the cultivation of *L. chinense* has been successfully popularized in Miaoli and it is ready to promote for product applications.

4.1 Green and black tea products

The results of organoleptic evaluation showed that the flavor and taste of black tea were better than the green tea.

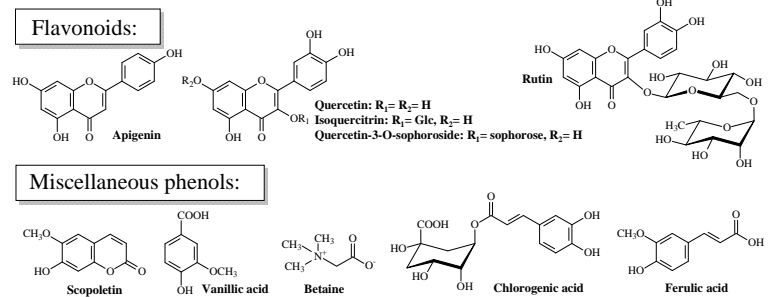
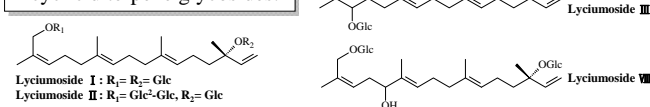


4.2 Noodle product



5. Active compound Categories of *L. chinense* :

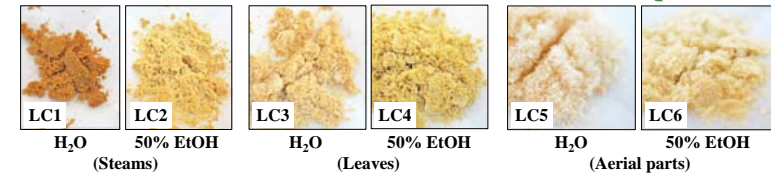
Acyclic diterpene glycosides:



6. Development of the dietary supplement :

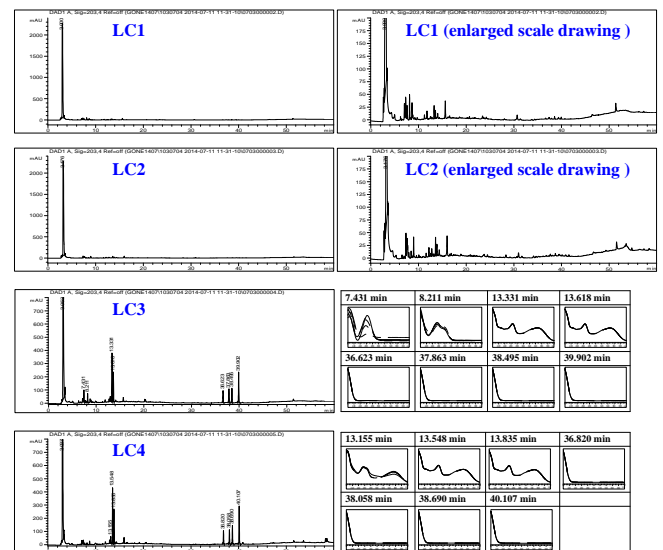
The stems, leaves, and aerial parts were extracted with water or 50% aqueous ethanol to yield the six extract prototypes (LC1-6).

6.1 Extracts (LC1-6) of the stems and leaves and aerial parts



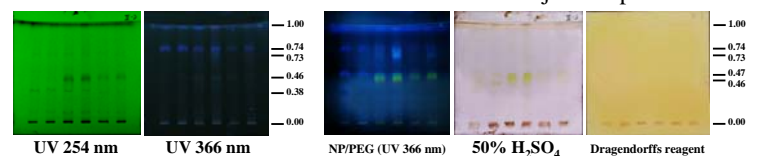
6.2 HPLC analyses of LC1-4

No significant peak was observed in the HPLC-UV analyses of the stems extracts (LC1-2). The HPLC results of leaves extracts (LC3-4) exhibited that flavonoids were the one of the major compounds categories (peaks in *R*_t 13-15 min)



6.3 TLC analyses of LC1-6

The TLC results showed that flavonoids were the major compounds.



7. Results and conclusion

In this study we developed food products and dietary supplements with *L. chinense*. To increase our knowledge in the pharmacological and nutraceutical effects of *L. chinense*, TLC and HPLC analyses of phenolic composition in the leaf products were also executed.