



## Application of the Identification of the Traditional Chinese Medicinal Herb Licorice with and without Processing – *Radix Glycyrrhizae praeparatae* vs. *Radix Glycyrrhizae*

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### Background

Pao Zhi (processing) is a very important procedure in Chinese herbal medicine. As well known, processing procedures such as stir-baking, steaming, and calcining may modify many properties of the herbs, such as efficacy and safety. According to the pharmacopoeia and related literatures, till now, no difference can be found via Thin-Layer Chromatography (TLC) in herbals treated with and without processing. Only few fluorescent spots of the same position and colors between sample and reference in the TLC were selectively compared.

### Materials and Methods

Chromatography was performed on a High-Performance Thin-Layer Chromatography (HPTLC) silica gel 60 F<sub>254</sub> plate as stationary phase while toluene: ethyl formate: formic acid: dichloromethane (10 : 12 : 6 : 12 V/V/V/V) was treated as mobile phase. The chromatogram was then examined at UV 254 nm/UV 365 nm and in white light/UV 365 nm after derivatization with 10% of sulfuric acid in ethanol reagent.

### Results and Discussion

There is a difference in clinical application between *Radix Glycyrrhizae* (Gan Cao, unprocessed) and *Radix Glycyrrhizae praeparatae* (Zhi Gan Cao, processed)(Figures 1&2). In TCM terms Gan Cao is slightly cool, would clear heat and eliminate toxins in body. In contrast, Zhi Gan Cao is namely the honey-processed form of Gan Cao tasting sweet and slightly warm. Zhi Gan Cao would tonify the spleen and benefit Qi in the body. For identification, the Pharmacopoeia exclusively compares chromatogram of the reference substance with that of other herbal reference.

In this report, a simple, rapid and cost efficient HPTLC method with high precision for identification of Zhi Gan Cao and Gan Cao are presented (Figure 3). Taken together, by the whole spectrum of the extract, the chromatogram provides us with typical characteristic patterns and possible differentiation between herbals with and without processing.



Figure 1. A photograph of dried root of *Glycyrrhizae uralensis* Fisch .



Figure 2. A photograph of *Radix Glycyrrhizae praeparatae* (left) and *Radix Glycyrrhizae* (right)

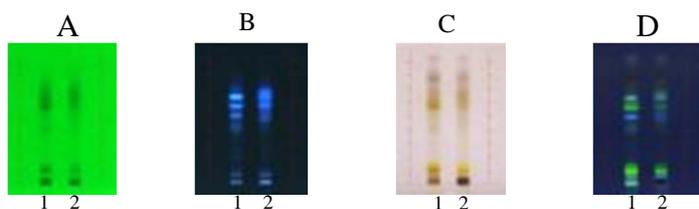


Figure 3. HPTLC fingerprints of Comparison of *Radix Glycyrrhizae* (Track 1) and *Radix Glycyrrhizae praeparatae* (Track 2). (A) UV 254 nm, (B) UV 365 nm, (C) white light after derivatization, (D) UV 365 nm after derivatization.

