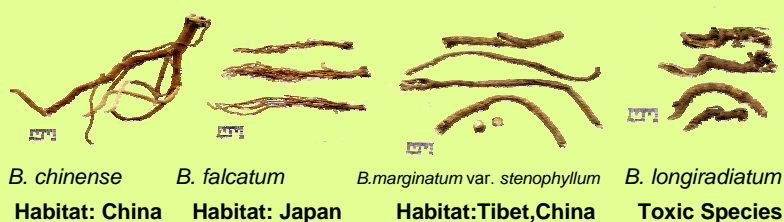


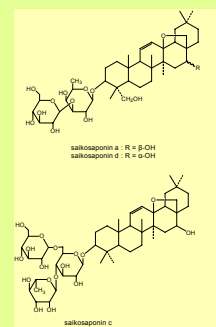
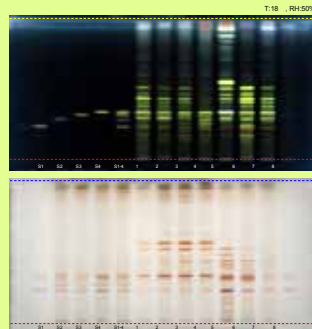
Introduction

The assessment of the chromatographic fingerprints plays much more important role in the standardization, authentication and quality control of **Traditional Herbal Medicine** than the conventional practice of selecting single marker as quality control target. In this paper, the HPTLC fingerprint study on a commonly used Traditional Chinese Herbal Medicine (TCHM), the root of umbelliferous *Bupleurum spp.* (Chai Hu) exemplified the powerful chromatographic technique applying to comprehensively identify the herbal drugs.



Experimental

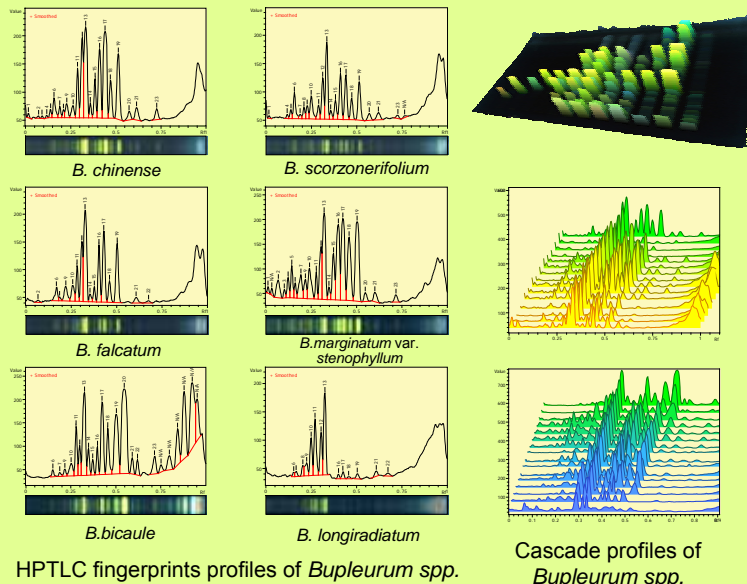
Samples: 41 batches of cultivated and wild *Bupleurum* species viz. *B. chinense* DC. and *B. falcatum* L. etc.
HPTLC fingerprinting condition: Merck SG60 precoated plate, mobile phase: dichloromethane-ethyl acetate-methanol-water (20:40:20:10), detection: spray with 2% Ehrlich's Reagent (p-DMAB) solution of 20% sulfuric acid in ethanol, heat at 105 until the zones are clear. Examine under daylight and 365nm.



Saikosaponins - Major Active Constituent in *B. spp.*

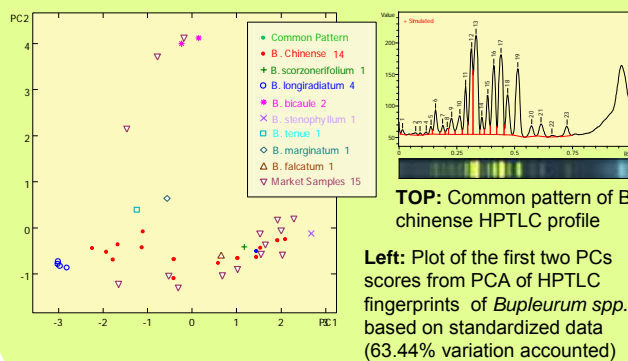
Fingerprint Profile Comparison

Documentation: CAMAG Reprostar3 with winCATs 1.4 **Profile Scan:** Chromap Chromafinger v0.9 chromatographic fingerprint solution.



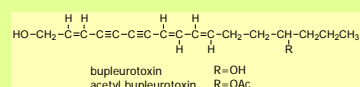
Pattern Recognition

Common Pattern Generation: The common pattern of *B. chinense* profile was generated through 14 batches of authenticated samples. **Multivariate data analysis:** similarity, principal component analysis (PCA), clustering etc. pattern recognition methods were used in data analysis. The result strongly supported the chemical differences between the HPTLC fingerprint of various species of *Bupleurum spp.* by intuitive observation of the HPTLC images.

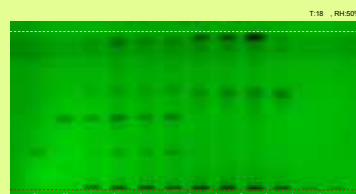


Discussion

- Rich-information obtained from the chromatographic fingerprint generated by colorful HPTLC image can serve comprehensive identification and assessment of multi-components entities of herbal medication.
- In this case study, a poisonous species of *Bupleurum longiradiatum* which contains toxic constituents like bupleurotoxin and acetyl bupleurotoxin can be easily differentiated from the commonly-used Radix Bupleuri Chinense and other medicinal species by both HPTLC fingerprint identification test (most saikosaponins) and specific identification test (bupleurotoxin and acetyl bupleurotoxin).



Top: Toxic alkalines in *B. longiradiatum*



Bottom: Bupleurotoxin and acetyl bupleurotoxin specific identification test (fluorescence quenching, UV254nm)