



Xanthenes purification with Centrifugal Partition Chromatography SCPC-250

Application Note 02

Introduction

The purple mangosteen (*Garcinia mangostana*) is a tree of Clusiaceae family. Fruits and leaves are used in medicine.

Centrifugal Partition Chromatography (CPC) also known as **Counter Current Chromatography (CCC)** is a preparative, pilot and industrial liquid purification technique that does not require traditional solid supports.

CPC was used to purify few mg of xanthenes from an extract of *Garcinia mangostana* pericarp.



Materials and Methods

A Gilson [SCPC-250](#) coupled with a Gilson [PLC2250](#) system and Lachrome Elite HPLC with DAD and ESI-MS detectors were used.

CPC solvent system is determined with shake flask method to get a $K_d = \frac{[\text{HPLC peak area of anthocyanin}]_{\text{stat}}}{[\text{HPLC peak area of anthocyanin}]_{\text{mobile}}}$ closed to one.





Table 1: CPC conditions

| | |
|-------------------|-------------------------------|
| CPC column volume | : 250 mL |
| Flow rate | : 4 mL/min |
| Rotation speed | : 1700 rpm |
| Solvent system | : Arizona R |
| Mass injected | : 175 mg of ethanolic extract |
| Detection | : 320 and 254 nm |

Results and Discussion

During CPC purification, automated HPLC injections are performed (in red on figure 1).

Three major compounds of the extract were isolated and their structures were identified by LC-MS :

- 3-isomangostin $[(M+H+H_2O)]^+ = 429$
- gartanin $[(M+H)^+ = 397]$
- α -mangostin $[(M+H)^+ = 411]$

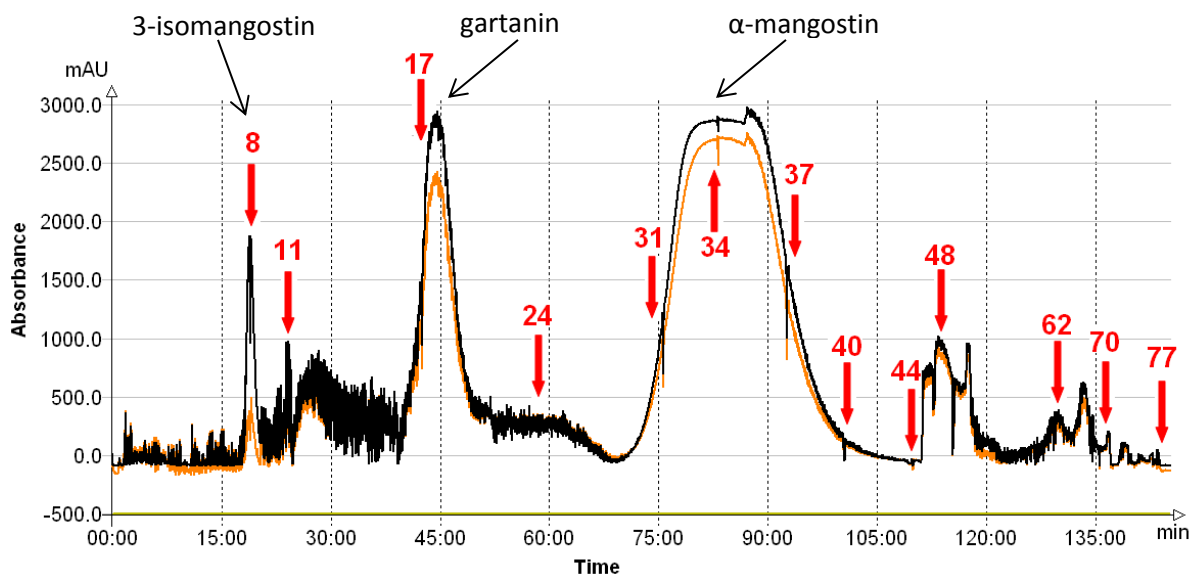


Figure 1: CPC chromatogram at 254 nm (in black) and 320 nm (in orange)



Conclusions

The combination of CPC, PLC and HPLC-ESI-MS allows the fast and simultaneous separation and identification of natural xanthenes in a crude extract whatever the mobile phase used for the separation.

Interfacing PLC/CPC with mass spectrometry provides a new automated analytical methodology in screening crude natural extracts. It's an isolation procedure that combines the advantages of CPC with the low detection limit of mass spectrometry.