

# Purification of Xanthenes from *Garcinia Mangostana* by Centrifugal Partition Chromatography coupled to HPLC-MS

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## Introduction

*Garcinia Mangostana* is a tree of Clusiaceae family native to southeast Asia, The fruit rind is ground and used in the treatment of diarrhea and dysentery, and for skin diseases. A tea made from the leaves and bark is used to lower fever and for urinary disorders.

Centrifugal Partition Chromatography (CPC) system was coupled with Spot Prep II system for automated separation by CPC and automated injection in HPLC during purification of xanthenes from *Garcinia Mangostana* ethanolic extract.



## Methodology

➤ **Instrument** : Armen SCPC-250 coupled with Armen Spot Prep II and LaChrome Elite HPLC with DAD and ESI-MS detectors.

➤ **Sample (Figure 3)**: 175mg of ethanolic extract from *Garcinia Mangostana* pericarp

- **CPC method**: column: SCPC 250, solvent system: Arizona R, flow-rate: 4ml/min, rotor speed: 1700rpm, detection: 254nm, 320nm
- **HPLC method**: column: Chromolith Performance RP18 (100\*4.6mm, 5µm), eluent: water/acn (35/65), flow-rate: 4ml/min, UV detection: 254nm, 279nm, 320nm, 366nm, ESI-MS detection: positive mode<sup>[1]</sup>

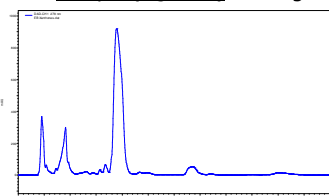


Figure 3: HPLC analysis at 280nm of sample

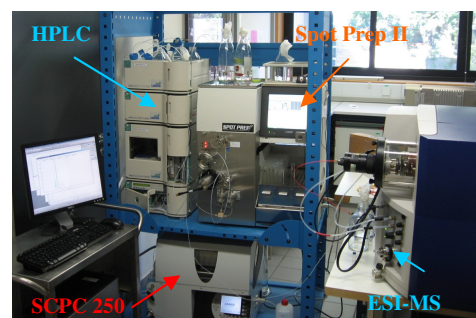


Figure 1: Experimental conditions

## Results and discussion

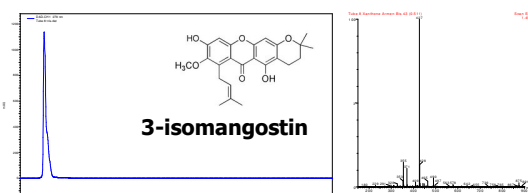


Figure A: HPLC-ESI-MS analysis at 320nm of fraction 8

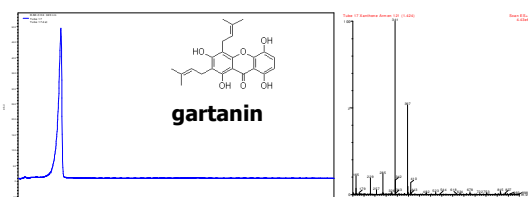


Figure B: HPLC-ESI-MS analysis at 320nm of fraction 17

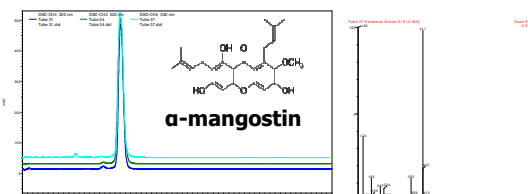


Figure C: HPLC-ESI-MS analysis at 320nm of fractions 31, 34, 37

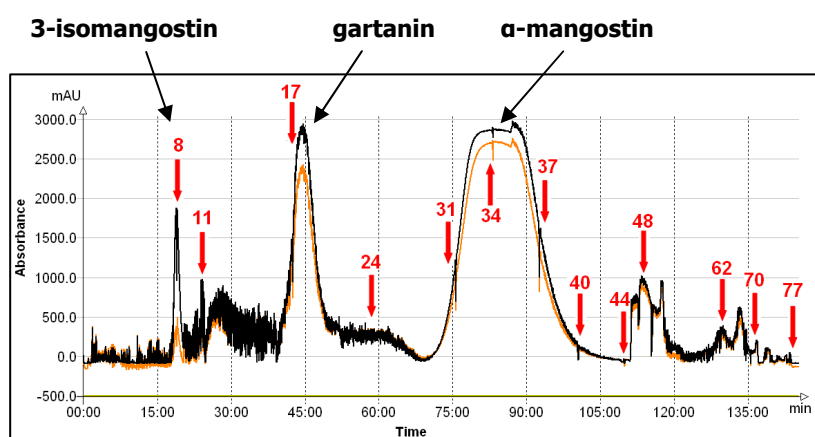


Figure 4: CPC Chromatogramme at 254nm (black) and 320nm (orange)

During CPC purification, automated HPLC injections are performed (in red on Figure 4). Three major compounds of Mangosteen pericarp extract were isolated and the structures of these compounds were identified during the separation by LC-MS (Figures A to C):

- 3-isomangostin [(M+H+H<sub>2</sub>O)<sup>+</sup> = 429]
- gartanin [(M+H)<sup>+</sup> = 397]
- α-mangostin [(M+H)<sup>+</sup> = 411].

## Conclusion

The combination of CPC, Spot Prep II 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 Spot Prep II/CPC with mass spectrometry provides a new automated analytical methodology in screening crude natural extracts and is an isolation procedure that combines the advantages of CPC with the low detection limit of mass spectrometry.

1) Destandeu E. and *Al.*, (2009), *Journal of Chromatography A*, 1216, p.1390-1394.

Notes : This application note has been produced and edited using information that was available when the data was acquired for each article. This application note is subject to revision without prior notice