

# Continuous industrial two steps purification of natural compound using True Moving Bed CPC\*

\*True Moving Bed Centrifugal Partition Chromatograph

G.Audo, C.Le Quemener

Armen instrument application laboratory

## Introduction

The aim of this study is to present another way to purify natural compound by CPC to increase the productivity of the technique. Classically, batch injection are done by injecting a define quantity of crude mixture. Size of the CPC column, solubility, mass injected and time of run define the productivity.

[6]-Gingerol was already purify in batch mode on the Armen SCPC-250. Here is presented a two steps continuous method to purify [6]-Gingerol from crude mixture with high productivity by using the True Moving Bed CPC technics.

## Apparatus



A complete Armen TMB CPC system set up with [TCPC250](#) equipped with 2 columns of 125 ml, four [AP50 pumps](#) and [Armen Glider TMB software](#) was used to perform the purification.

HPLC was performed on [LaChrom Elite HPLC system](#) (VWR) equipped with Photodiode Array Detector (PDA) (200-800 nm) using Purosphere RP18e 250 mm x 4.6 mm I.D. 5µm column with pre column



## Sample

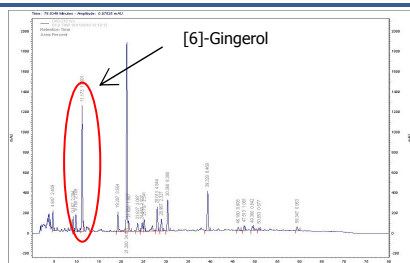


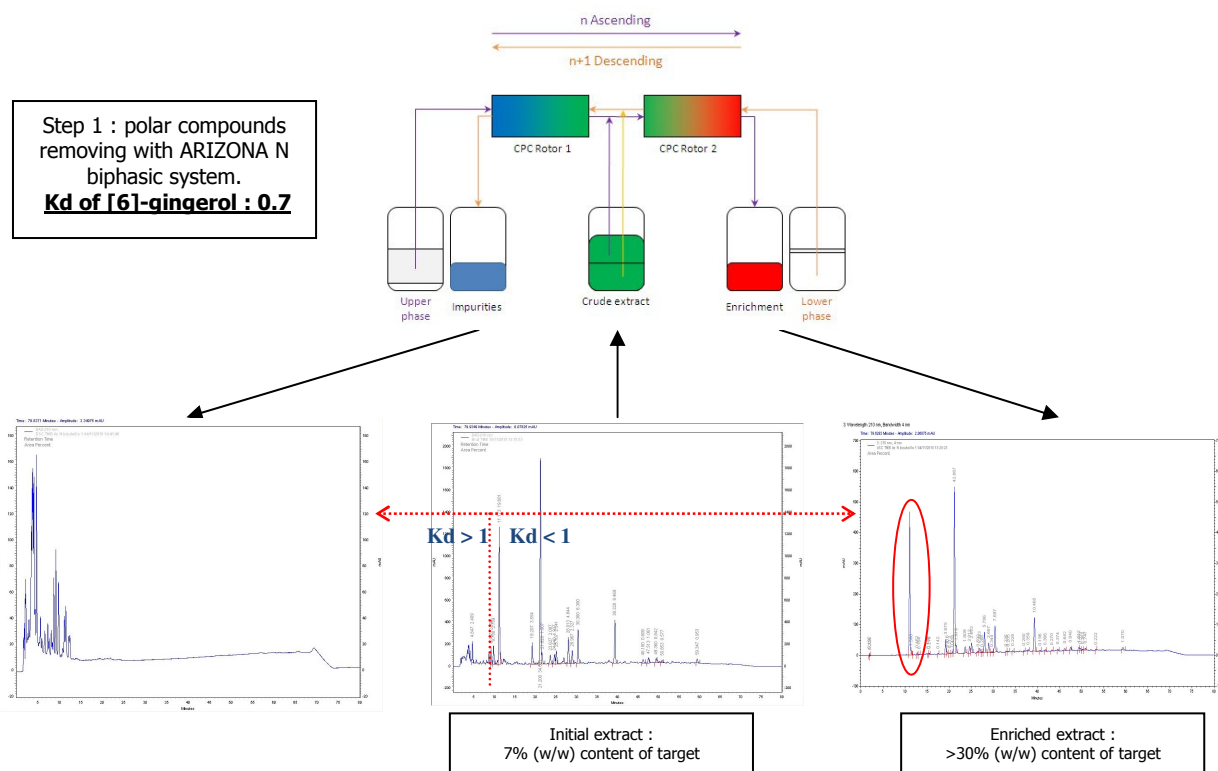
Figure 1. HPLC analysis 210 nm of crude mixture extract.

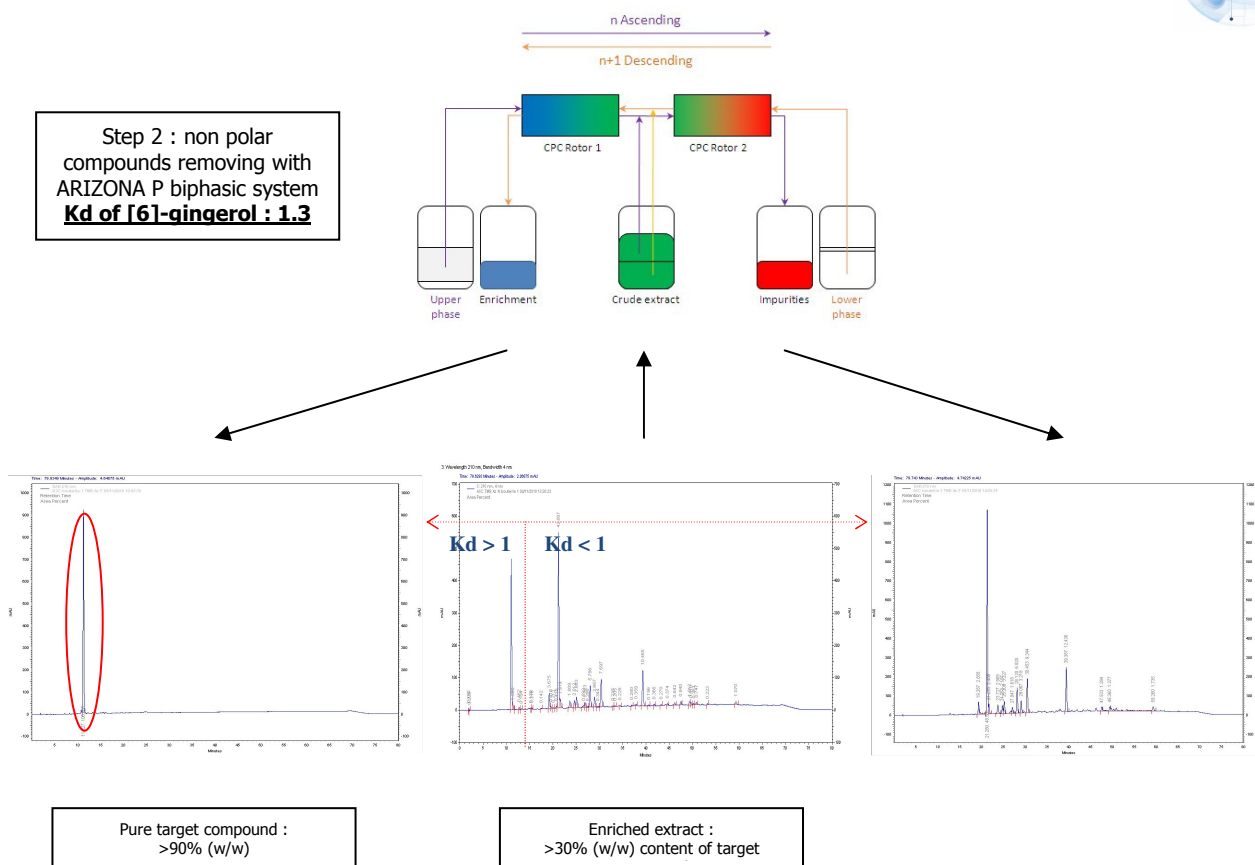
Table 1 Analytical HPLC conditions

HPLC column	:Purosphere RP18, 250X4.6mm, 5µm
Mobile phase A	:Water
Mobile phase B	:ACN
Time program	:40%B (0.00 min)–95%B(55 min)- 95%B(65 min)-40%B(70 min)-40%B(80 min)
Flow rate	:1 mL/mn
Injection volume	:2 µL
Temperature	:40°C

Crude extract was first analyzed by HPLC. Target compound is identify at  $t_r=11,17$  mn and 19,6% peak area at 210 nm.

## Results





TMB system allows to inject continuously the sample between two CPC columns and to recover from one side of the system the more polar compounds of the extract (which have more affinity for lower aqueous phase) and on the other side the less polar compounds of the extract (which have more affinities for the upper organic phase).

The development of the method is based on the determination of the good solvent system that allows getting partition coefficient above one for all compounds on the left part and  $K_d$  upper one for right part.

To obtain pure compounds two continuous steps are needed to eliminate polar impurities first and then non polar impurities

## Conclusions

The difference with a simple biphasic liquid extraction in funnel is that CPC TMB gives enough plate to be able to really obtain two different extracts without any traces from one part to another.

As continuous process it allows very high productivity with a minimum of operation (solvent removing and fractions analysis) for low cost processing.

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