

Armen CPC application note N°06

Gingerol purification with SCPC-250

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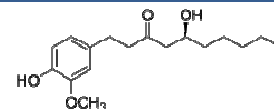
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Introduction

[6]-Gingerol is a naturally occurring plant phenol, is one of the major components of ginger. It is responsible for the characteristic taste of ginger.

CPC was used to purify few mg of [6]-gingerol from crude extract. Three runs of 0.5, 1 and 2 g were done.



Apparatus



An **Armen SCPC-250** connect to an **Armen Spot prep II** system equipped with 50 ml/mn quaternary gradient pump, UV/Vis detector, fraction collector and AGCPC software was used.

HPLC was performed on **LaChrom Elite HPLC system** (VWR) equipped with Photodiode Array Detector (PDA) (200-800 nm).

Sample

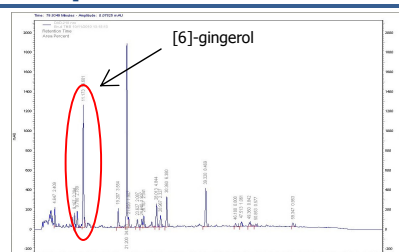


Figure 1. HPLC analysis 210 nm of crude mixture.

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. [6]-gingerol is identify at $t_r=11,17$ mn and 19,6% peak area at 210 nm [**Fig.1**]

Results

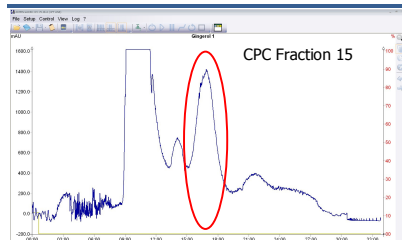


Figure 2. CPC chromatogram 210 nm of 500 mg injection

Table 2 CPC conditions	
CPC column volume	:250 mL
Elution flow rate	:10 mL/mn
Extrusion flow rate	:30 mL/mn
Rotation speed	:2000 rpm
Solvent system	: Hept/AcOEt/MeOH/W
Mode	:Ascending
Mass injected	:0.5, 1 and 2 g
Sample	:in 5 mL lower + 5 mL upper
Detection	:210 nm

CPC solvent system is determined with shake flask method to get a $K_d=[\text{HPLC peak area of gingerol}]_{\text{stat}}/[\text{HPLC peak area of gingerol}]_{\text{mobile}}$ closed to one. Three CPC runs are done with 0.5 [**Fig 2&3**], 1 and 2 g of crude extract. The sample is dissolved in 5 ml of upper phase and 5 ml of lower phase, filter through a 0.45 µL membrane filter and inject in CPC according to conditions describe in table 2. CPC Fractions obtained are analyzed by HPLC and grouped according to HPLC purity. Results are resumed in table 3

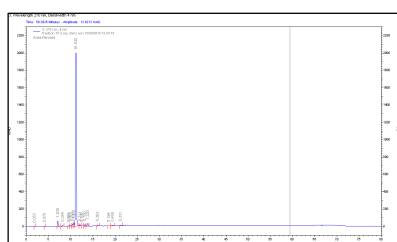


Figure 3. HPLC analysis 210 nm of CPC fraction 15

Table 3 results

CPC run N°	Mass injected	Run time	Solvent consumption	Compound A recovered	Yield	HPLC purity 210 nm
1	500 mg	30 mn	600 ml	31 mg	6.2%	90 %
2	1 g			69 mg	6.8%	96 %
3	2 g			87 mg	4.5%	92 %

Conclusion

250 mL CPC column allows injection of 2g of crude mixture to get 87 mg of pure 6-gingerol. Therefore, multi gram injection could be perform 1L CPC or higher CPC columns for scale up and production. Continuous injection is investigate on this application using a TMB CPC system (Armen CPC application note N°7)

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