



Quantitation of 6-gingerol Using the Versatile PLC 2050 Liquid Chromatography System

Application Note PHA0314

Introduction

Fractionation of Ginger (*Zingiber officinale* Rosc.) has identified bioactive components, including the antioxidant 6-gingerol. A crude extract of gingerol was used to demonstrate the capacity of the Gilson **PLC 2050** (Personal Liquid Chromatography) system to separate and quantitate compounds with analytical HPLC columns. Method development was first performed on a LaChrom *Elite*TM analytical HPLC system (Hitachi) and then transferred to the Gilson **PLC 2050** for chromatographic comparison.



Figure 1. Gilson PLC 2050

Materials & Methods

LaChrom Elite (Hitachi) is equipped with a 10 mL/min quaternary gradient pumping system, Photodiode Array Detector (200-800 nm), and EZChrom EliteTM Chromatography Data Software.

PLC 2050 (Gilson) is equipped with a 50 ml/min quaternary gradient pumping system, UV/Vis detector (200-840nm), and Gilson Glider Prep Software.

Analytical Method is the same for all tests (see Table1).

Column	Merck Purospher [®] RP18e (250 mm x 4.6 mm I.D. 5µm with pre column)		
Sample	extract of gingerol	Flow-rate	1ml/min
Eluent A	Water	Oven T°	30°C
Eluent B	Acetonitrile	Detection	UV/Vis detector at 210nm
Method	40% to 5% B		55min
	5% B		10 min
	5% to 40% B		5 min
	40% B		10min

Table 1. Analytical conditions used to generate the gingerol extract chromatograms.



Results and Discussion

In this test, the profile of analytical separation on the **PLC 2050** (Figure 2B) was similar to the chromatogram obtained using the LaChrom *Elite*TM HPLC system (Figure 2A).

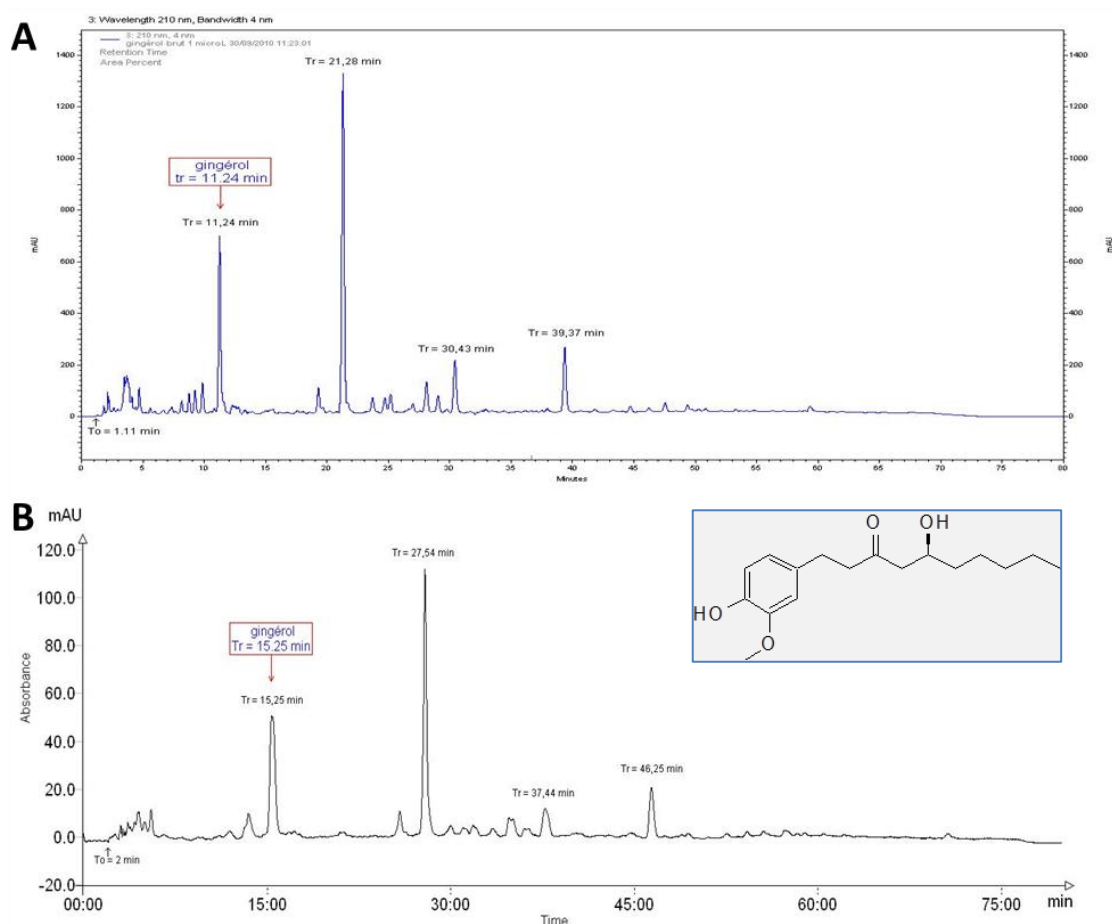


Figure 2. HPLC Chromatogram at 210 nm. Gingerol (inset) was separated from a crude extract using A) a LaChrom EliteTM (Hitachi) and B) a Gilson PLC 2050 personal chromatography system.

Summary

- The Gilson **PLC 2050** system allows for reproducible analytical injections with good resolution on a 4.6 mm ID HPLC column. Results were obtained using a 1.3 mm path length flow cell; however a flow cell with a longer path length (2.4mm) could be useful for better sensitivity.
- In addition to the analytical capabilities illustrated here, the **PLC 2050** can also be used with MPLC, preparative HPLC and CPC columns for automated compound purification, making it a highly versatile laboratory tool for both purification and analysis.