

# APPLICATIONS

## Optimized Filtration of Ginger Formulation Pills Using Phenex™ PTFE Syringe Filters and Kinetex® 2.6 µm Biphenyl LC Column

### Introduction

Filtration as sample preparation technique is useful to remove large particles before injection onto a column or it can be used to help filter samples before they undergo an additional sample preparation technique, such as supported liquid extraction (SLE) or solid phase extraction (SPE). Without proper sample filtration, contaminated samples could elute off into the column, elevate the baseline, or could cause a possible risk of ghost peaks, along with other additional system maintenance. Using Phenex Syringe Filters help to mitigate these problems and protects injector valves, prevents rework, and reduces downtime. This application displays the analysis of a ginger pill with and without proper filtration, as well as the subsequent carry over that results from an unfiltered sample.

### Sample Preparation

1. Dissolved a Gaia® Supreme Ginger Pill in 10 mL of Methanol/Water (80:20) into a Verex™ Vial
2. Filtered it through a Phenex PTFE 0.45µm Syringe Filter (Part No.: AF0-1102-52)

### LC-MS/MS Conditions

**Column:** Kinetex 2.6 µm Biphenyl

**Dimensions:** 50 x 4.6 mm

**Part No.:** 00B-4622-E0

**Mobile Phase:** A: 0.01% Phosphoric acid in Water

B: 0.01% Phosphoric acid in Acetonitrile

Gradient: Time (min)	%B
0	30
7	100
9	100
9.5	30
12.5	30

**Flow Rate:** 1.8 mL/min

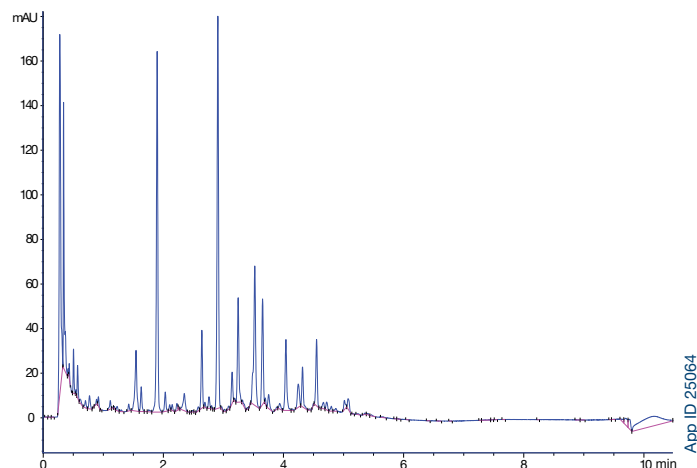
**Injection:** 2 µL

**Temperature:** 30°C

**Detection:** 282 nm

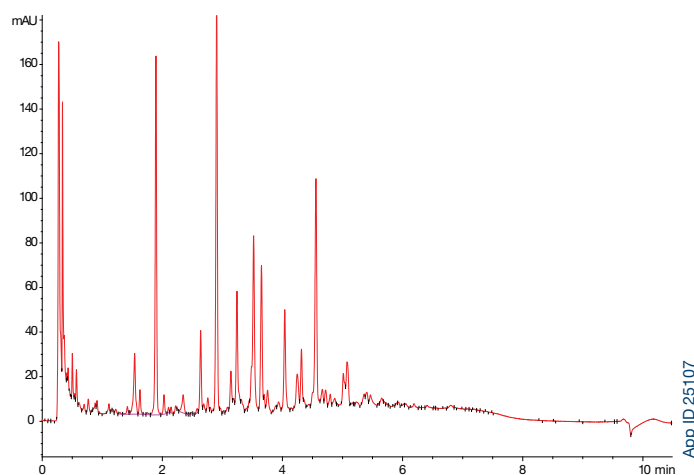
**Figure 1.**

Ginger Pill Sample Filtered by a Phenex PTFE Syringe Filter



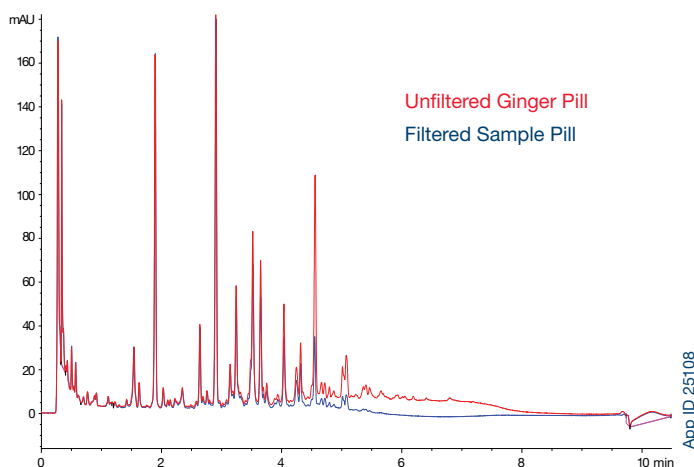
**Figure 2.**

Unfiltered Ginger Pill Sample



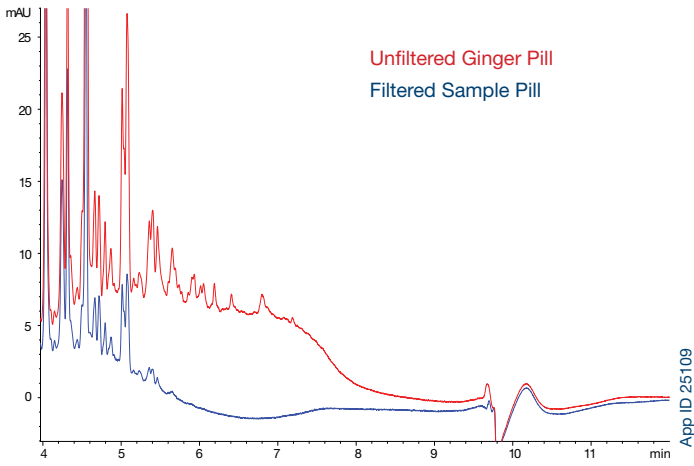
**Figure 3.**

Overlay of Unfiltered and Filtered Ginger Sample

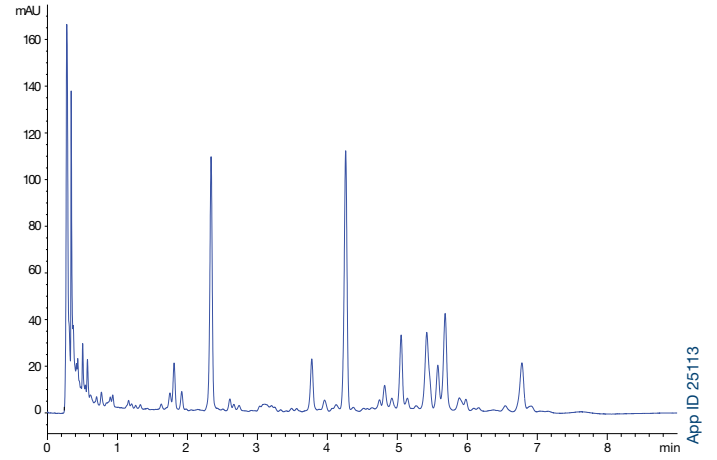


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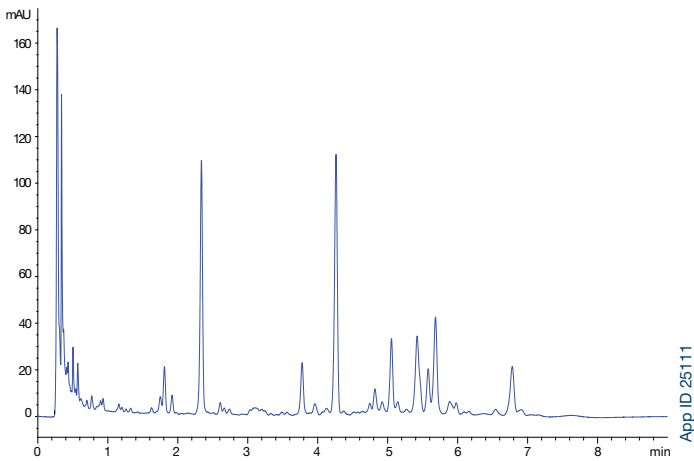
**Figure 4.**  
Overlay of Unfiltered and Filtered Ginger Sample



**Figure 6.**  
The Blank Run After the Unfiltered Sample



**Figure 5.**  
Injection of the Unfiltered Sample with a Ghost Peak



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## Ordering Information

Phenex™ Syringe Filters		4 mm Diameter for ≤ 2 mL sample volumes		15 mm Diameter for 2 – 10 mL sample volumes		25 - 28 mm Diameter for 10 – 100 mL sample volumes	
Membrane Type/Size	Part No.	Unit	Part No.	Unit	Part No.	Unit	
RC (Regenerated Cellulose)	AF0-3203-12	100/pk	AF0-2203-12	100/pk	AF0-8203-12 <sup>5</sup>	100/pk	
	AF0-3203-52	500/pk	AF0-2203-52	500/pk	AF0-8203-52 <sup>5</sup>	500/pk	
PES <sup>3</sup> (Polyethersulfone)	—	—	—	—	AF0-8208-12 <sup>7</sup>	100/pk	
	—	—	—	—	AF0-8208-52 <sup>7</sup>	500/pk	
PTFE <sup>6</sup> (Polytetrafluoroethylene)	AF0-3202-12	100/pk	AF0-2202-12	100/pk	AF0-1202-12	100/pk	
	AF0-3202-52	500/pk	AF0-2202-52	500/pk	AF0-1202-52	500/pk	
NY (Nylon)	AF3-3207-12	100/pk	AF0-2207-12	100/pk	AF0-1207-12	100/pk	
	AF3-3207-52	500/pk	AF0-2207-52	500/pk	AF0-1207-52	500/pk	
0.20 µm GF/NY <sup>2</sup> (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1A47-12 <sup>7</sup>	100/pk	
					AF0-1A47-52 <sup>7</sup>	500/pk	
PVDF (Polyvinylidene Fluoride)	—	—	AF6-5206-12 <sup>8</sup>	100/pk	AF6-6206-12	100/pk	
	—	—	AF6-5206-52 <sup>8</sup>	500/pk	AF6-6206-52	500/pk	
GF/PVDF (Glass Fiber/Polyvinylidene Fluoride)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a PVDF membrane. The hydrophilic PVDF membrane provides high flow rates and throughput, low extractables and broad chemical compatibility. This membrane binds less protein than nylon or PTFE membranes.				AF6-6C06-12	100/pk	
					AF6-6C06-52	500/pk	
CA <sup>4</sup> (Cellulose Acetate)	—	—	—	—	AF0-8204-12 <sup>7</sup>	100/pk	
	—	—	—	—	AF0-8204-52 <sup>7</sup>	500/pk	
GF/CA <sup>2,3,4</sup> (Glass Fiber/Cellulose Acetate)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.				AF0-8A09-12 <sup>7</sup>	100/pk	
					AF0-8A09-52 <sup>7</sup>	500/pk	
RC (Regenerated Cellulose)	AF0-3103-12	100/pk	AF0-2103-12	100/pk	AF0-8103-12 <sup>5</sup>	100/pk	
	AF0-3103-52	500/pk	AF0-2103-52	500/pk	AF0-8103-52 <sup>5</sup>	500/pk	
PES <sup>3</sup> (Polyethersulfone)	—	—	—	—	AF0-8108-12 <sup>7</sup>	100/pk	
	—	—	—	—	AF0-8108-52 <sup>7</sup>	500/pk	
PTFE <sup>6</sup> (Polytetrafluoroethylene)	AF0-3102-12	100/pk	AF0-2102-12	100/pk	AF0-1102-12	100/pk	
	AF0-3102-52	500/pk	AF0-2102-52	500/pk	AF0-1102-52	500/pk	
NY (Nylon)	AF3-3107-12	100/pk	AF0-2107-12	100/pk	AF0-1107-12	100/pk	
	AF3-3107-52	500/pk	AF0-2107-52	500/pk	AF0-1107-52	500/pk	
0.45 µm GF/NY <sup>2</sup> (Glass Fiber/Nylon)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a Nylon (NY) membrane. Excellent for filtration of particle-laden samples, such as foods and beverages, environmental, biofuels, and dissolution samples. Use less hand pressure to filter even the most difficult samples. Outlet connection is luer lock.				AF0-1B47-12 <sup>7</sup>	100/pk	
					AF0-1B47-52 <sup>7</sup>	500/pk	
PVDF (Polyvinylidene Fluoride)	—	—	AF6-5106-128	100/pk	AF6-6106-12	100/pk	
	—	—	AF6-5106-528	500/pk	AF6-6106-52	500/pk	
GF/PVDF (Glass Fiber/Polyvinylidene Fluoride)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a PVDF membrane. The hydrophilic PVDF membrane provides high flow rates and throughput, low extractables and broad chemical compatibility. This membrane binds less protein than nylon or PTFE membranes.				AF6-6D06-12	100/pk	
					AF6-6D06-52	500/pk	
GF/CA <sup>2,3,4</sup> (Glass Fiber/Cellulose Acetate)	An integrated syringe filter unit containing an inert borosilicate glass fiber prefilter and a CA membrane. Excellent for filtration of tissue culture media, general biological sample filtration and clarification. Outlet connection is luer lock.				AF0-8B09-12 <sup>7</sup>	100/pk	
					AF0-8B09-52 <sup>7</sup>	500/pk	
1.20 µm GF <sup>2,3</sup> (Glass Fiber)	Prefiltration of heavily contaminated or highly viscous samples. When used in-series preceding a membrane filter, clogging of the membrane filter is prevented and sample clean up is optimized. Outlet connection is luer lock.				AF0-8515-12 <sup>7</sup>	100/pk	
					AF0-8515-52 <sup>7</sup>	500/pk	



- Larger quantity purchases at significant savings are available.
- Glass fiber filters are 28 mm diameter and made of borosilicate. They will remove 90 % of all particles >1.2 µm.
- Housing material is methacrylate butadiene styrene (MBS) polymerisate. Also known as Cyrolite®.

- Cellulose acetate is surfactant-free.
- 26 mm diameter.
- Hydrophobic membrane. Can be made hydrophilic by pre-wetting with IPA.

- 28 mm diameter.
- 17 mm diameter.
- Additional dimensions and membrane types are available. Please contact your local Phenomenex technical consultant or distributor for availability or assistance.



Above syringe filters are non-sterile. Housing is made of medical-grade polypropylene (PP), and offer luer lock inlet/slip outlet connections, unless otherwise indicated.

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## Kinetex® Biphenyl Ordering Information

Kinetex 2.6 µm Columns (mm)	SecurityGuard™ ULTRA Cartridges†			SecurityGuard ULTRA Cartridges†			SecurityGuard ULTRA Cartridges†		
	50 x 2.1	100 x 2.1	3/pk	50 x 3.0	3/pk	50 x 4.6	100 x 4.6	150 x 4.6	3/pk
Biphenyl	00B-4622-AN	00D-4622-AN	AJ0-9209 for 2.1 mm ID	00B-4622-Y0	AJ0-9208 for 3.0 mm ID	00B-4622-E0	00D-4622-E0	00F-4622-E0	AJ0-9207 for 4.6 mm ID

† SecurityGuard ULTRA cartridges require holder, Part No. AJ0-9000.

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