

Flash Cartridge Recovery and Yield Study

Increase High Purity Fractions with Reveleris™ Flash Cartridges

Abstract

The demand for fast and easy purification techniques is increasing. To satisfy the need for flash cartridges with better resolution and higher loading capacity, Reveleris™ high-resolution flash cartridges have been developed by Grace Davison Discovery Sciences. The silica packed in Reveleris™ cartridges was specifically designed (patent pending) to increase cartridge efficiency (plates/meter) and reduce unwanted mixed-mode interactions, thereby increasing resolution of closely eluting compounds. This results in an increase in sample recovered at the desired purity level. By purifying greater amounts on a given cartridge size, users can reduce purification costs and increase productivity.

To demonstrate the improvement in sample recovery and yields that can be provided by the Reveleris™ cartridge's increased resolution, we compared Reveleris™ cartridges to leading competitive cartridges for the purification of α -tocopherol from δ -tocopherol.

Experiment and Results

See Figure 1 for experimental conditions and procedures.

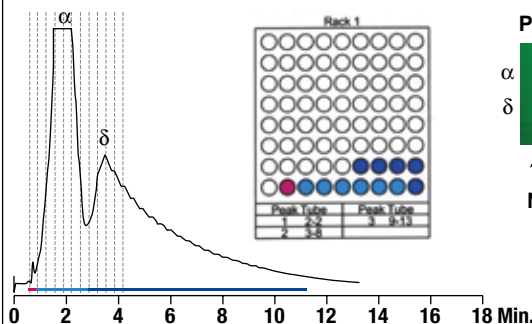
As shown in Figure 1, Reveleris™ cartridge's superior resolution increases the yield of high purity fractions. Higher resolution and greater loading capacity enables the Reveleris™ 12g cartridge to purify a 2g injection of α -tocopherol from δ -tocopherol. Six pure fractions (as analyzed using TLC) were recovered from the Reveleris™ cartridge, compared to only two pure fractions from the Competitor A and Competitor B cartridges.

From the TLC spotting information, each cartridge's pure α -tocopherol fractions were combined, added to a pre-weight round bottom flask, rotavaped down to dryness, and weighed. As shown in Table 1, the increase in the number of high purity fractions recovered yielded up to a 3x increase in pure compound recovered.

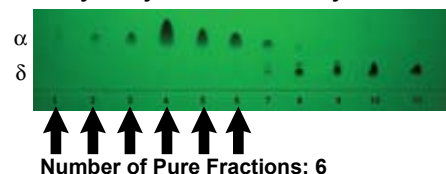
Figure 1

Purification of α -tocopherol from δ -tocopherol

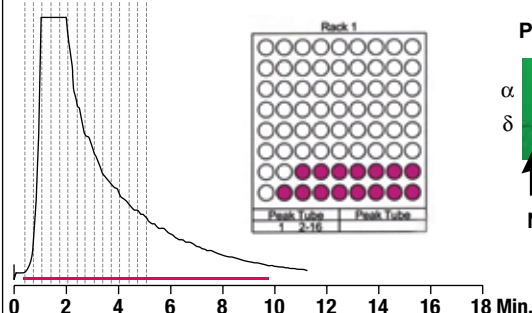
Reveleris™ Cartridge



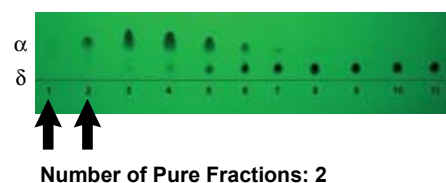
Purity Analysis of Fractions by TLC



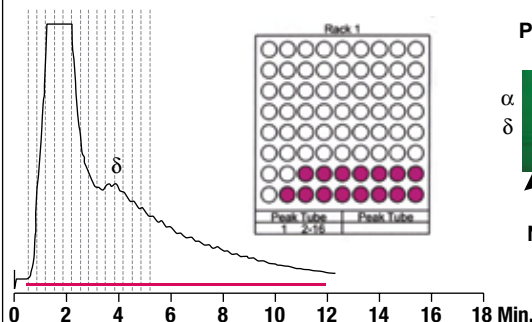
Competitor A Cartridge



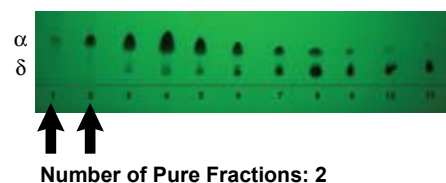
Purity Analysis of Fractions by TLC



Competitor B Cartridge

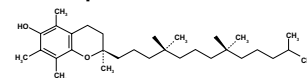


Purity Analysis of Fractions by TLC

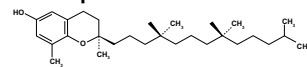


Instrumentation: Teledyne Isco® CombiFlash® Companion®
Flash Cartridge: 12 gram, silica
Wavelength: 295nm
Isocratic: Solvent A: Hexane 97%
 Solvent B: THF 3%
Sample: 250mg α -tocopherol/mL, 250mg δ -tocopherol/mL
Sample Inject Volume: 4mL (16.8% Loading)
Flow Rate: 30mL/min

α -Tocopherol



δ -Tocopherol



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Grace Davison Discovery Sciences Regional Headquarters:

In the Americas:

2051 Waukegan Rd.
 Deerfield, IL 60015
 Tel: +1 847 948 8600
 Email: discoverysciences@grace.com

In Europe:

Brandstraat 12
 B-9160 Lokeren, Belgium
 Tel: +32 09 340 65 65
 Email: discoverysciences.BE@grace.com

In Asia:

19th Floor, K.Wah Center
 1010 Huai Hai Zhong Road
 Shanghai 200031 PRC
 Tel: 86 21 54674678
 Email: dsbiv.asia@grace.com

In Australia/New Zealand:

2 Kerr Court
 Rowville, 3178
 Victoria, Australia
 Tel: +61 3 9237 6100
 Email: discoverysciences.AU@grace.com

Summary

Reveleris™ cartridges are packed with a new silica (patent pending) that results in superior resolution and loading capacity versus some leading competitors. Increased resolution and loading capacity from Reveleris™ cartridges gives up to a 3X increase in pure compound recovered. By purifying greater amounts on a given cartridge size, users can reduce purification costs and increase productivity.

Table 1

	Reveleris™ Cartridge	Competitor A	Competitor B
Number of Pure Fractions	6	2	2
Grams of α -tocopherol Recovered	0.7589g	0.2300g	0.2597
Yield of Dried α -tocopherol	75.89%	23.00%	25.97%
Times Greater Yield	3.3X	0X	1.13X
Recovery Calculation Procedure The percent yield calculation was done as follows: (Dried Weight of Tocopherol/Loading Weight of Tocopherol) X 100.			

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Grace Davison Discovery Sciences Regional Headquarters:

In the Americas:

2051 Waukegan Rd.
Deerfield, IL 60015
Tel: +1 847 948 8600
Email: discoverysciences@grace.com

In Europe:

Brandstraat 12
B-9160 Lokeren, Belgium
Tel: +32 09 340 65 65
Email: discoverysciences.BE@grace.com

In Asia:

19th Floor, K.Wah Center
1010 Huai Hai Zhong Road
Shanghai 200031 PRC
Tel: 86 21 54674678
Email: dsbiz.asia@grace.com

In Australia/New Zealand:

2 Kerr Court
Rowville, 3178
Victoria, Australia
Tel: +61 3 9237 6100
Email: discoverysciences.AU@grace.com