

# 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  $\alpha$ -tocopherol from  $\delta$ -tocopherol.

## Experiment and Results

See Figure 1 for experimental conditions and procedures.

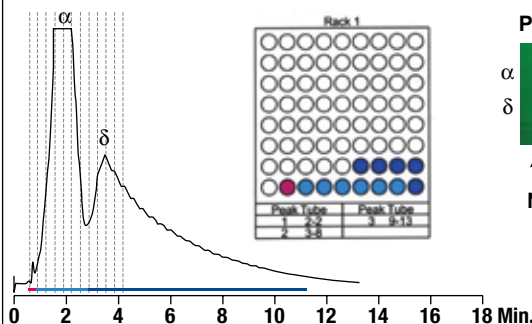
As shown in Figure 1, Reveleris™ cartridge's superior resolution increases the yield of high purity fractions. Higher resolution and greater loading capacity enables the Reveleris™ 12g cartridge to purify a 2g injection of  $\alpha$ -tocopherol from  $\delta$ -tocopherol. Six pure fractions (as analyzed 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  $\alpha$ -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.

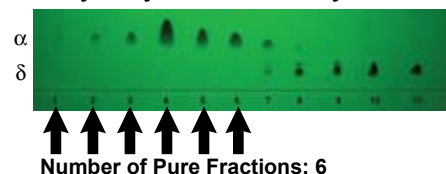
**Figure 1**

Purification of  $\alpha$ -tocopherol from  $\delta$ -tocopherol

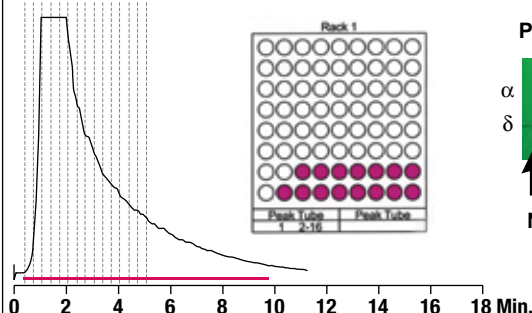
### Reveleris™ Cartridge



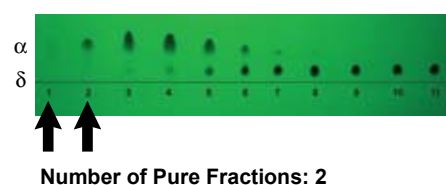
### Purity Analysis of Fractions by TLC



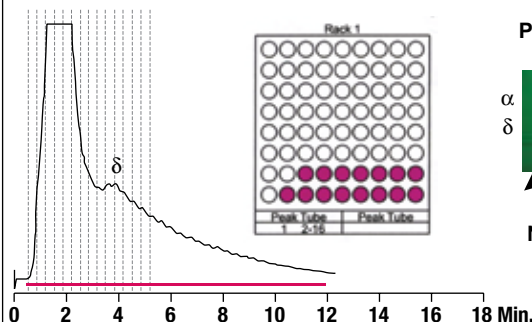
### Competitor A Cartridge



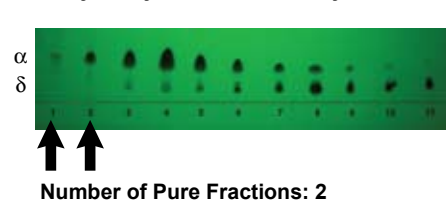
### Purity Analysis of Fractions by TLC



### Competitor B Cartridge

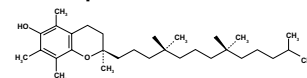


### Purity Analysis of Fractions by TLC

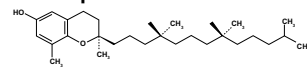


**Instrumentation:** Teledyne Isco® CombiFlash® Companion®  
**Flash Cartridge:** 12 gram, silica  
**Wavelength:** 295nm  
**Isocratic:** Solvent A: Hexane 97%  
 Solvent B: THF 3%  
**Sample:** 250mg  $\alpha$ -tocopherol/mL, 250mg  $\delta$ -tocopherol/mL  
**Sample Inject Volume:** 4mL (16.8% Loading)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

### $\alpha$ -Tocopherol



### $\delta$ -Tocopherol



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## 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 $\alpha$ -tocopherol Recovered	0.7589g	0.2300g	0.2597
Yield of Dried $\alpha$ -tocopherol	75.89%	23.00%	25.97%
Times Greater Yield	3.3X	0X	1.13X
<b>Recovery Calculation Procedure</b> The percent yield calculation was done as follows: (Dried Weight of Tocopherol/Loading Weight of Tocopherol) X 100.			

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