

Resolving Minor Compounds with RediSep Rf Gold™ Columns

Flash chromatography purification using smaller, spherical particles

Abstract

In drug discovery, it is advantageous to collect compounds synthesized in side reactions from desired compounds. These minor compounds are collected for the purposes of screening and patent protection. Pharmaceutical companies are concerned that similar compounds may show activity in a therapeutic area and should be separated from the desired compound. The minor compounds may show activity similar to the desired material. Collection of minor compounds is also important to demonstrate that these materials do not affect the efficacy or toxicity of the pharmaceutical product. Minor compounds are often difficult to resolve from the main compounds since they are generally an isomer of the main compound.

RediSep Rf Gold columns use a smaller particle size that enhances resolution, while minimizing increases in back pressure due to the spherical particle shape. Proprietary end user purifications are used as examples.

Results and Discussion

Resolution is proportional to the square root of the number of theoretical plates (N). $N \approx 1/d_p$, where d_p is the average particle size. The RediSep Rf Gold column derives its improved resolution from smaller particle sizes which increases the number of theoretical plates. This enhanced resolution allows easier collection of minor compounds.

Table 1: Run Conditions for Example 1

Column size:	40 g
Load:	500 mg (1.1% loading)
Solvents:	Hexane and Ethyl Acetate
Gradient:	0-100%
Flow rate:	40 mL/min
Run time:	23 min.
Wavelength:	254 nm

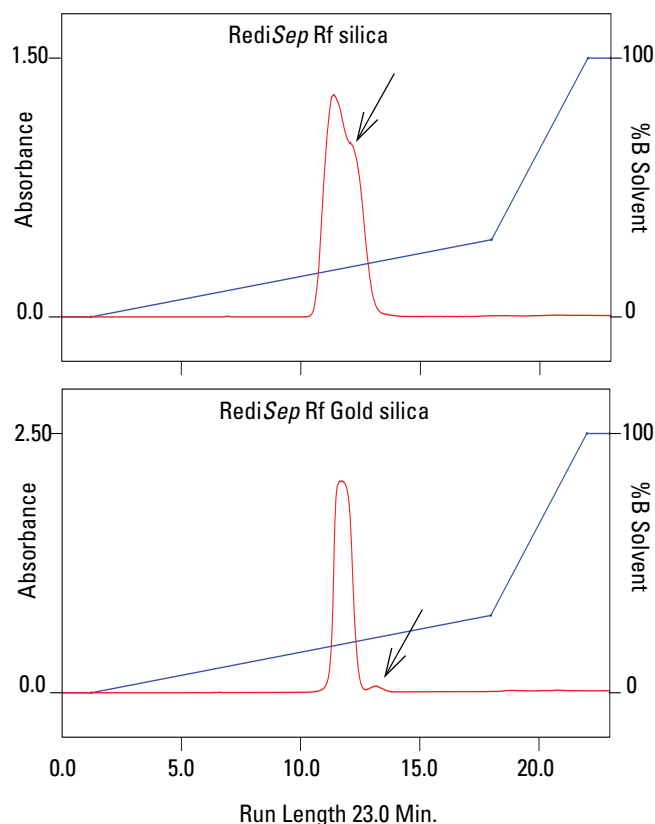


Figure 1: CombiFlash Rf system chromatogram of a 450 mg separation using a RediSep Rf silica column (top) and a RediSep Rf Gold silica column (bottom). Arrows denote minor compound.

Near baseline resolution was obtained with the RediSep Rf Gold silica column. The ΔR_f between the two compounds was 0.1 on TLC.

The second example is again provided courtesy of the end user. Here, two minor compounds can be purified from the main peak, compared with only one on a conventional Flash column.

Table 2: Run Conditions for Example 2

Column size:	40 g
Load:	500 mg (1.1% loading)
Solvents:	Hexane and Ethyl Acetate
Gradient:	20%
Flow rate:	40 mL/min
Run time:	19 min.
Wavelength:	254 nm

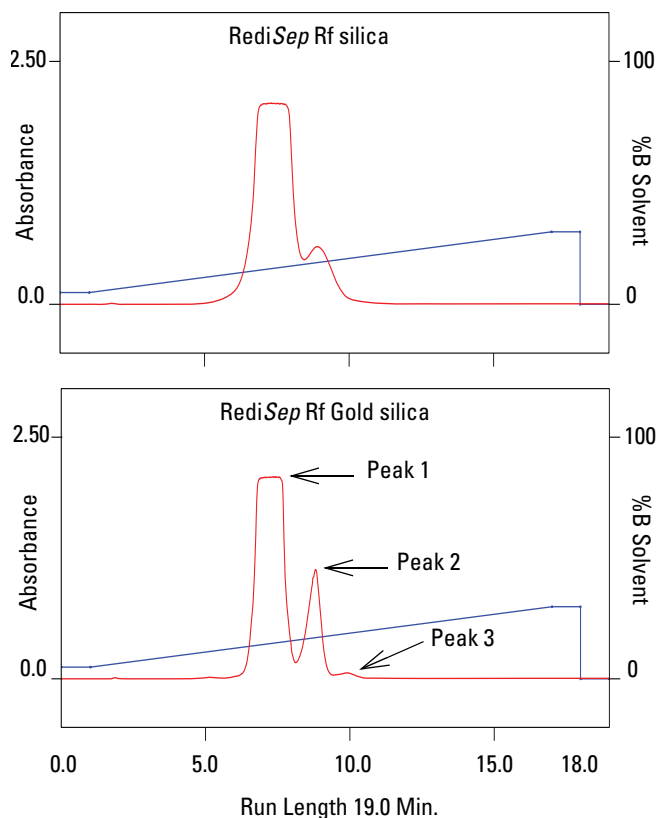


Figure 2: CombiFlash Rf system chromatogram of a minor compound separation using a RediSep Rf silica column (top) and a RediSep Rf Gold silica column (bottom)

Conclusion

RediSep Rf Gold columns, packed with a smaller, spherical media provide higher resolution than conventional Flash columns without the higher back pressures. This enhanced resolution can be used to purify minor compounds, which may be screened for activity.

Table 3: RediSep Rf Gold Columns

Part Number	Description
69-2203-344	RediSep Rf Gold RediSep Rf Gold Column, 4 g, pkg of 14
69-2203-345	RediSep Rf Gold RediSep Rf Gold Column, 12 g, pkg of 14
69-2203-346	RediSep Rf Gold RediSep Rf Gold Column, 24 g, pkg of 10
69-2203-347	RediSep Rf Gold RediSep Rf Gold Column, 40 g, pkg of 10
69-2203-348	RediSep Rf Gold RediSep Rf Gold Column, 80 g, pkg of 6
69-2203-349	RediSep Rf Gold RediSep Rf Gold Column, 120 g, pkg of 6
69-2203-359	RediSep Rf Gold RediSep Rf Gold Column, 220 g, pkg of 4
69-2203-369	RediSep Rf Gold RediSep Rf Gold Column, 330 g, pkg of 3
69-2203-427	RediSep Rf Gold RediSep Rf Gold Column, 750 g, pkg of 3
69-2203-428	RediSep Rf Gold RediSep Rf Gold Column, 1500 g, pkg of 2

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