Is 100% aqueous stability and unique polar selectivity not enough to convince you to try Luna Omega? Well, here is another equally-compelling reason

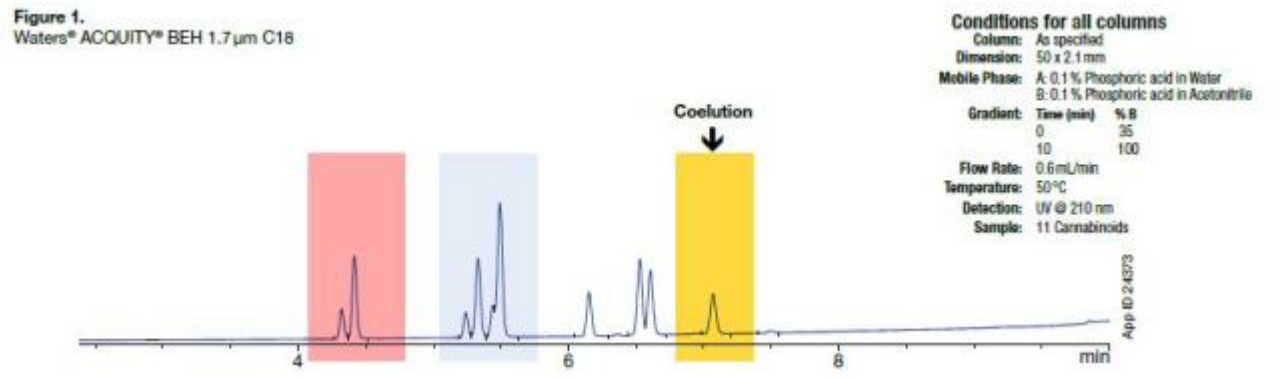
Guest Author: Dr. Jeff Layne

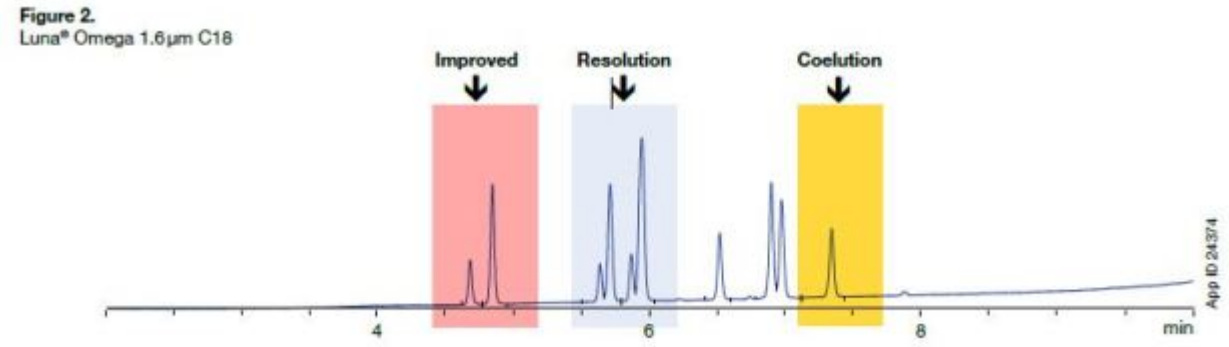
You Can Never Have Too Much Efficiency!

The efficiency of a column is a measurement of the amount of band broadening that occurs to the sample bands as they travel through the column. Columns with a higher efficiency value will generate peaks that are narrower than a column with a lower efficiency. The practical benefit of this is that narrower peaks allow for better resolution between closely-eluting analytes, and narrower peaks also result in an increase in peak height response, which means (in many cases) better limits of detection and quantitation. So, all things being equal, a column with higher efficiency is almost always going to be a better option than a column with lower efficiency. When it comes to efficiency, you cannot have too much of a good thing.

Phenomenex's new Luna® Omega 1.6 µm media is based upon a fully porous silica particle that is exposed to a proprietary thermal treatment process to remove micropores that can contribute to band broadening. The net result of this is that Luna Omega columns will generate higher efficiency than columns packed with conventional fully porous media of similar particle size. This is exemplified below—in this case for a group of naturally-occurring cannabinoids. You can see in **Figure 1** the separation of 11 cannabinoids on a leading UHPLC product – the Waters® ACQUITY® BEH 1.7 µm C18 column. Below that is the same sample analyzed using the Luna Omega 1.6 µm C18 column under identical

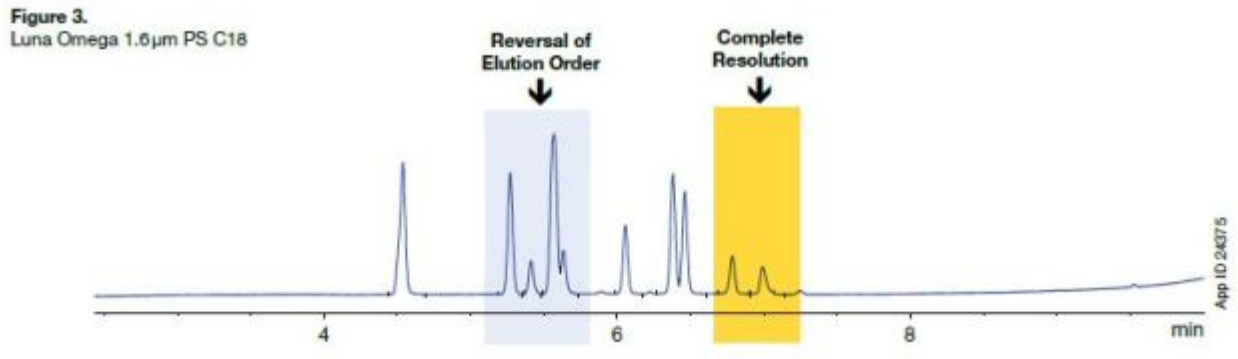
conditions (**Figure 2**). You can see that, for these types of molecules, both columns display very similar selectivity, but the higher surface area and higher efficiency of the Luna Omega 1.6 µm media provides improved resolution of the critical pairs highlighted in pink and blue.





However, sometimes a brute-force approach is not always the only way to solve a problem, and evaluating phases with slightly different selectivity is an essential part of the method development process. In **Figure 3**, you can see the same separation performed using the Luna Omega 1.6 µm PS C18, which contains a proprietary, positively charged functional group on the surface in addition to the C18 bonding. Under the exact same conditions, you

can see the reversal in elution order of the peaks highlighted in the blue box. In addition, note that the last two peaks are fully resolved on the Luna Omega PS C18 phase (yellow box), whereas they totally co-elute on the standard C18 phases.



When developing methods for the analysis of highly lipophilic molecules like these, we recommend evaluating both Luna Omega 1.6 µm C18 and Luna Omega 1.6 µm PS C18, two potential solutions for this type of separation challenge.

For more information for your LC methods and columns request your FREE HPLC Troubleshooting Guide today!

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