Increased Productivity with YMC-Triart Prep
Based on client's real-life data

Abstract

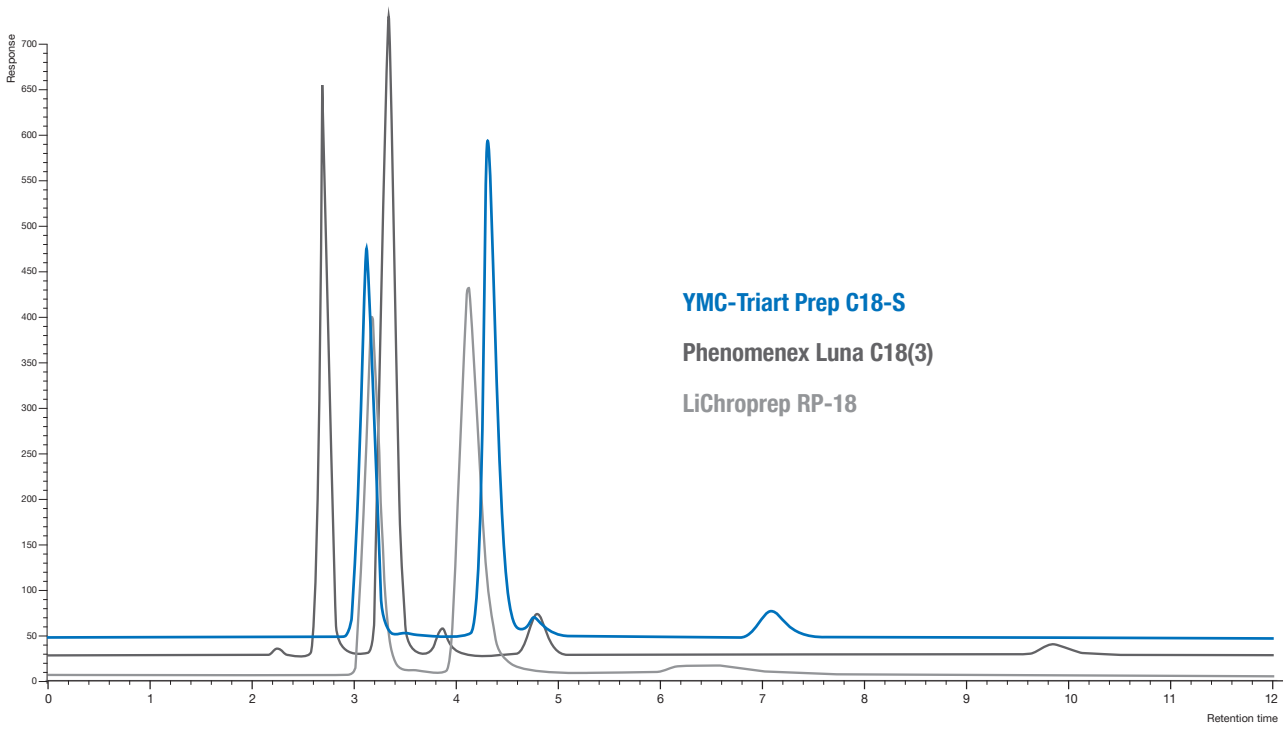
High productivity is the key factor of every preparative LC process. It is achieved by maximum loadability which determines the throughput and the yield of the product. In order to create a very efficient purification process, selectivity screenings are usually the first task. It allows to choose fast and efficiently the optimal suited stationary phase for highest loadings.

This application note is based on client's real-life data. They evaluated the performance of three different C18-modified stationary phases in a phase screening.

The result: YMC-Triart Prep C18-S impressively outperforms alternative materials due to higher loadability and greater purity!

Best selectivity with YMC-Triart Prep C18-S

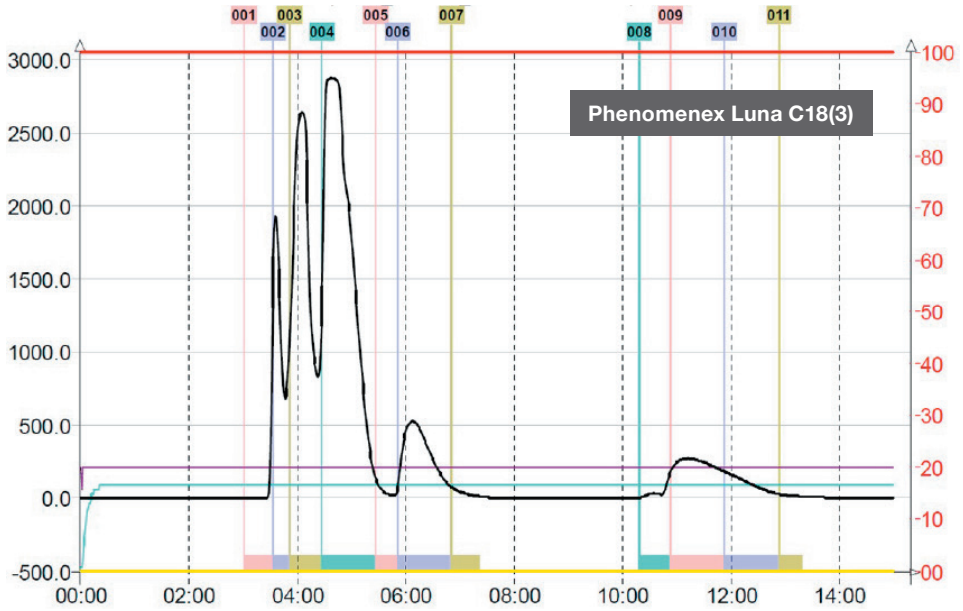
In this client's real-life process, three different materials were tested. The critical peak pair is of special interest. Obviously, YMC-Triart Prep C18-S shows the best separation compared to the alternative materials! All peaks are well separated and high loadings during further process development can be expected.

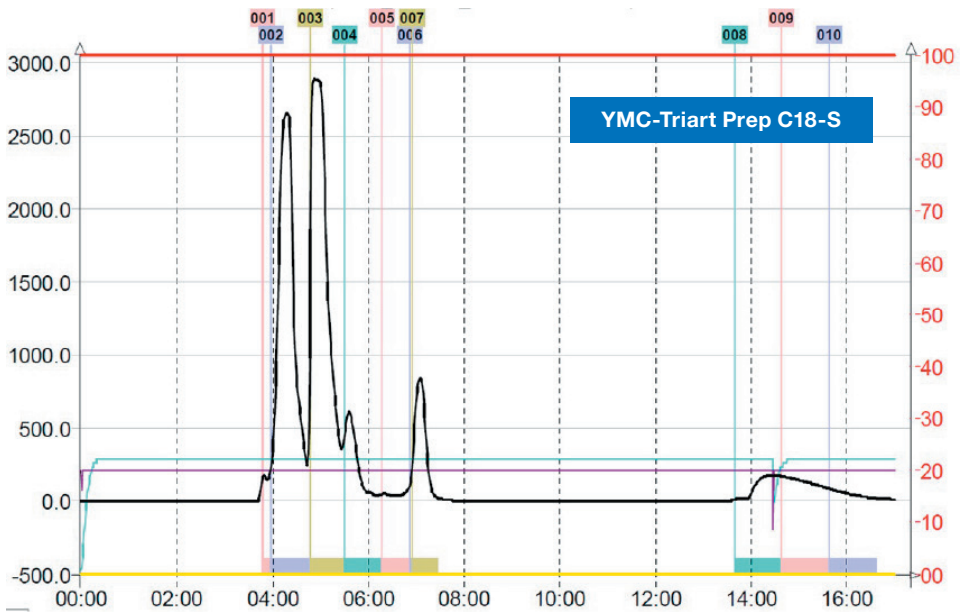


Stationary phase:	**YMC-Triart Prep C18-S** **Phenomenex Luna C18(3)** **LiChroprep RP-18**
Mobile phase:	H_2O - methanesulfonic acid (0.10%)
Flow rate:	1.0 mL/min
Wavelength:	254 nm
Feed:	10 µL, 1 µg/µL

Better resolution with YMC-Triart Prep C18-S leads to highest loadability

Resolution at analytical loading level is promising. Though, it needs to be guaranteed at preparative level, too. In order to determine the capability of a stationary phase, loading studies are performed. Again, YMC-Triart Prep C18-S convinces clearly. The critical peaks are well separated so that higher loading can be administered enhancing productivity even further. Whereas alternative stationary phases show weaknesses and higher loading might not lead to sufficient results.



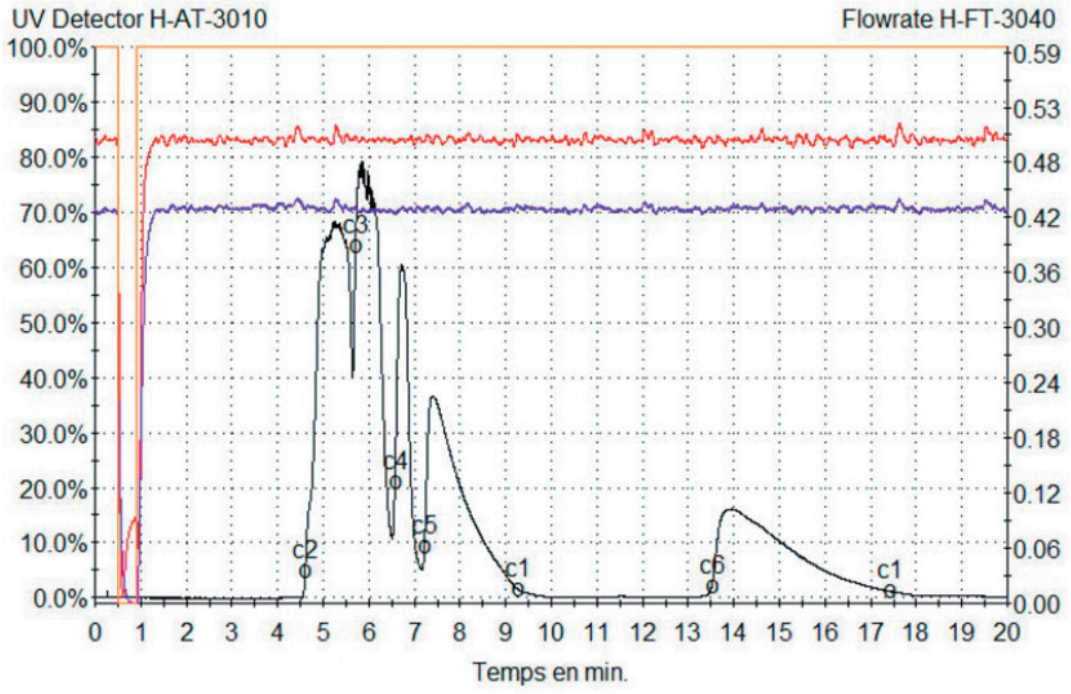


Stationary phase:	**Phenomenex Luna C18(3)** **YMC–Triart Prep C18-S**
Column:	50 mm ID packed with 0.3 kg stationary phase
Mobile phase:	H_2O - methanesulfonic acid (0.10%)
Flow rate:	100 mL/min
Wavelength:	254 nm
Feed:	0.5 g, 2.5 mL

Preparative loading study

Based on the great results during the phase screening and the loadability studies, YMC-Triart Prep C18-S was selected for the further process development.

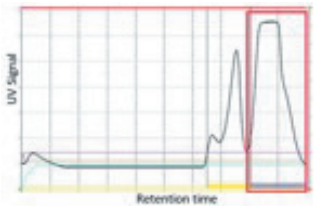
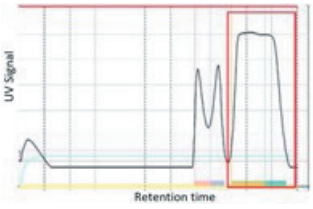
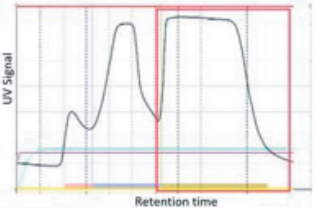
Now loading was increased to 6 g in 30 mL feed with a flow rate of 450 mL/min! At this scale, YMC-Triart Prep C18-S still shows an excellent separation behaviour!



Stationary phase:	**YMC-Triart Prep C18-S**
Column:	110 mm ID packed with 1.5 kg stationary phase
Mobile phase:	H_2O - methanesulfonic acid (0.10%)
Flow rate:	450 mL/min
Wavelength:	254 nm
Feed:	6 g, 30 mL

Increased productivity with YMC-Triart Prep C18-S

The comprehensive comparison clearly shows the advantages of YMC-Triart Prep C18-S. The increased loadability results in a more than doubled productivity – with the highest purity level at the same time!

	LiChroprep RP-18	Phenomenex Luna C18(3)	YMC-Triart Prep C18-S
Particle Size [µm]	15–25	10	10
Pore Size [nm]	10	10	12
Surface Area [m^2/g]	300	400	360
Injection Amount [g]	0.5	0.75	**1.25**
Cycle Time [min]	5.0	5.5	**3.0**
Purity [%]	>98	98.9	**99.0**
Chromatograms[1]			
Productivity factor	0.8	1.2	**2.0**

[1] client's real life data.
Retention times may not be comparable.

+ 150%

Conclusion

Results driven from this real process data clearly show the benefits of using next generation stationary phase for purifications. YMC-Triart Prep C18-S outperformed alternative standard C18 materials. YMC-Triart Prep C18-S's **excellent selectivity** enables **high loadability**. Consequently, YMC-Triart Prep C18-S was chosen for further process development

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