

APPLICATION NOTE

Comparing STYROS® 1R With PLRP-S.

This Application Note compares STYROS® Simulated-Monolith™ polymeric to 3µm polymeric PLRP-S 100A 50x2.1MM.

Both media have been compared on narrow-bore format of 2.1 mm ID using the certified sample H2899 of Supelco made of 4 proteins (Ribonuclease A, Cytochrome c, Holo-transferrin and Apomyoglobin).

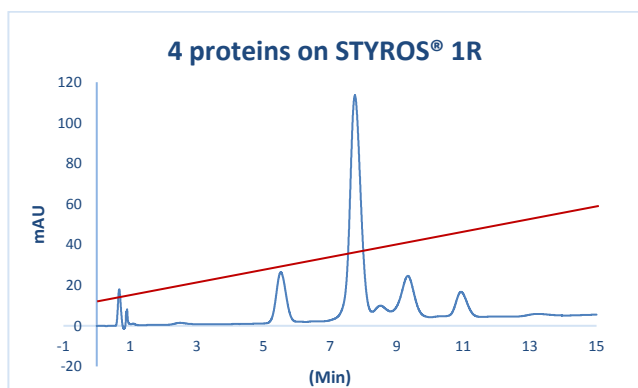


Table 1. Operating parameters.

HPLC System.	Agilent 1290 with thermostatted column compartment and binary pump.
Columns	STYROS® 1R 2.1 X 50 mm (0.173 ml volume)
Mobile phase.	A: H2O, 0.075 % TFA B: 5% H2O in ACN, 0.075 % TFA
Flow rates	0.2 ml/min (347 cm/hr of linear velocity on an empty column)
Gradient	5 to 60 % B in 15 min
Temperature	30°C
Detection	254 nm
Injection volume	10 µl
Pressure Drop	15 bars at 0.2 ml/min.
Sample:	Certified diagnostic test H2899 Supelco

Notice the low back pressure at 0.2 ml/min volumetric flow rates, that is >300 cm/hr of linear velocity. These numbers are to be compared with 100 cm/hr that soft gel operates. The leaching of soft get occurs even at low flow rates during the production of vaccines during the downstream process and no amount of “polishing” can remove the leached and contaminated product as witnessed using subzero refrigeration required to minimize contaminated enzyme activities.

The Simulated-Monolith™ displays low back pressures and is an appropriate fit during the automated digestions where the combination of 2 columns in series are required to trap the digests, wash them clean from any salt and elevated pH prior to exposing any silica column to it. The alternative would have been the PLRP-S column. However the high back pressures of the media are prohibitive.

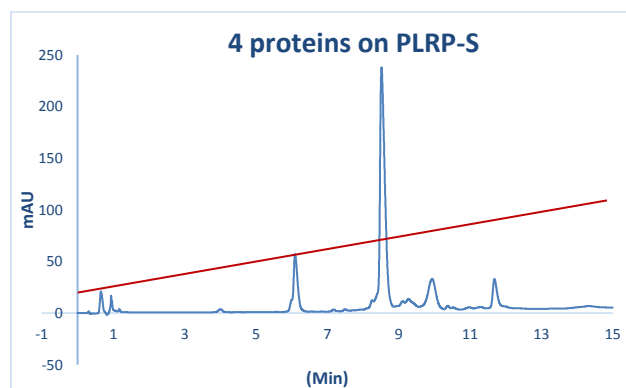


Table 2. Operating parameters.

HPLC System.	Agilent 1290 with thermostatted column compartment and binary pump.
Columns	PLRP-S 2.1 X 50 mm (0.173 ml volume)
Mobile phase.	A: H2O, 0.075 % TFA B: 5% H2O in ACN, 0.075 % TFA
Flow rates	0.2 ml/min (347 cm/hr of linear velocity on an empty column)
Gradient	5 to 60 % B in 15 min or
Temperature	30°C
Detection	254 nm
Injection volume	10 µl
Pressure Drop	90 bars at 0.2 ml/min.
Sample:	Certified diagnostic test H2899 Supelco

It is recommended to avoid exposure to H2O alone as PLRP-S unravels in it. STYROS® Simulated-Monolith™ have been engineered with the high degree of stability that prevents any leaching in all its form including anion, cation and many form of affinities. StyrosZyme® immobilized enzyme are the practical and ultimate example of such claim.

