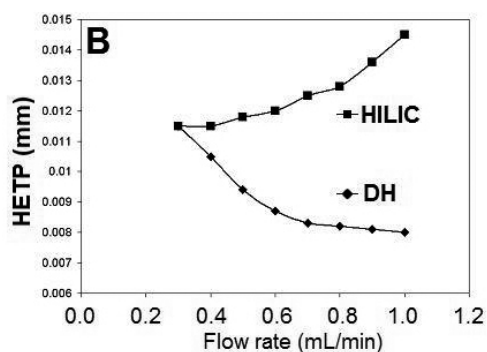
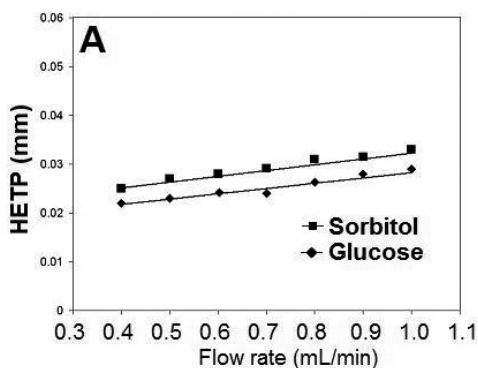


**Very High Flow Rate, High Efficiency & Selectivity**  
**Standard HPLC Equipment**



**Notes:**

- A) Glucose and sorbitol on Diamond Hydride™ column (2.1 x 150 mm, particle size 4 μm)
- B) Comparison of commercial HILIC (4.6 x 150 mm, particle size 3.5 μm) and Diamond Hydride™ column (4.6 x 150 mm, particle size 4.0 μm) in Aqueous Normal Phase retention of uracil.

Charts are adapted from "Analysis of Hydrophilic Metabolites in Physiological Fluids by HPLC-MS using a Silica Hydride-Based Stationary Phase". J.J. Pesek, M.T. Matyska, J.A. Loo, S.M. Fischer, T.R. Sana, J. Sep. Sci., 32 (2009) 2200-2208

**Method Conditions**

**Column:** Cogent Diamond Hydride™ 4μm, 100Å.  
**Catalog No.:** 70000-15P-2  
**Dimensions:** All  
**Solvents:** A: DI water + 0.1% formic acid.  
 B: Acetonitrile + 0.1% formic acid.  
**Mobile Phase:** 20%A/80%B  
**Flow Rate:** Variable  
**Injection Volume:** 10 microL  
**Detection:** UV (Uracil) and LC-MS (Sorbitol, Glucose)  
**Figures:** Plots of efficiency (HETP) vs. flow rate.

**Discussion**

**Figure A** shows a plot of "Flow Rate vs. HETP" for two carbohydrates analyzed using a 2.1 x 150 mm column. From the plot it is evident that while the flow rate is increased by a factor of 2.5 the efficiency is only slightly lower (~15%). When a 1 mm column was used over the same flow rates (linear flow rates more than four times higher) the decrease in efficiency was only 20%.

**Figure B** shows a plot of "Efficiency vs. Flow Rate" for uracil using a 4.6 x 150mm column. From the plot it can be seen that efficiency increases as the flow rate increases from 0.3 to 1.0 mL/min. In contrast when a market leading HILIC column was used under the same conditions, the efficiency dropped by more than 30% over this same range of flow rates. It should be noted that linear flow rates are more than 6 times greater in the 2.1 mm column than in the 4.6 mm.

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