Waters
Lab Highlights
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ANALYSIS OF SUGARS II

RETENTION TIMES ON DEXTRO-PAK RADIAL-PAK™ CARTRIDGE

Lab Highlight # 0210 listed the retention times of a number of sugars and related compounds on a Sugar-PAK™ I Column. Data for the same samples, run on a Dextro-PAK Radial-PAK™ Cartridge under recommended operating conditions (water, 1.0 ml/min, room temperature) is presented here in Table 1.

TABLE 1
RETENTION TIMES (MINUTES)
DEXTRO-PAK

SAMPLE	RETENTION TIME
1-Butanol	N/R
2-Deoxyglucose	3.42
2-Propanol	N/R
Acetonitrile	7.40 (varies w/concentration)
Adonitol	2.87
Arabinose	3.00
Cellobiose	3.70
Ethanol	6.83
Ethylene Glycol	3.50
Fructose	2.92
Fucose	4.07
Galactose	2.77
Glucose	2.82
Glucose-6-phosphate	2.10
Glycerol	3.15
Lactulose	3.82
Lactose	3.00/3.22 (doublet)
Lyxose	2.97
Maltose	3.45
Maltotriose	4.40/4.75 (doublet)
Mannitol	2.87
Mannose	2.87
Melibiose	3.12
Methanol	3.90
Panose	4.95
Raffinose	7.00
Rhamnose	3.27
Ribose	3.07
Sorbitol	2.85
Sorbose	2.82
Stachyose	6.25
Sucrose	4.37
Xylitol	2.87
Xylose	2.82
Xylulose	3.12

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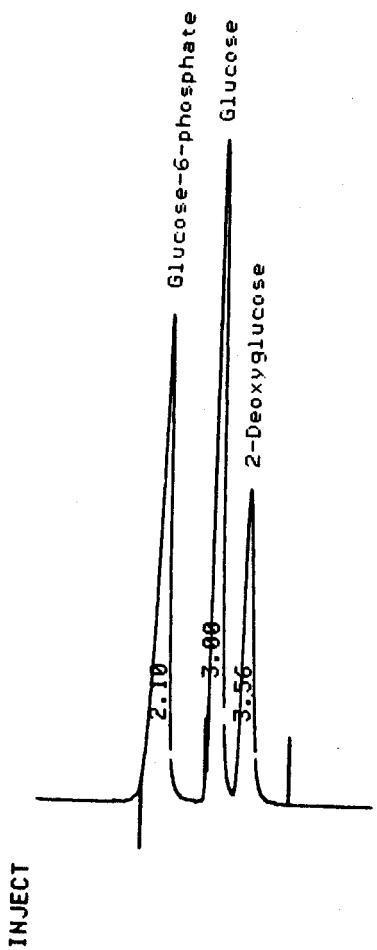
As expected, there is little resolution of samples having similar molecular weight (e.g. the monosaccharides). It is possible to use the Dextro-PAK cartridge for purposes other than resolution of glucose oligomers. Ethanol, for example, is well separated from the simple sugars. It is also possible to resolve glucose-6-phosphate, glucose, and 2-deoxyglucose in four minutes (Figure 1).

FIGURE 1



It is strongly recommended that a RESOLVE™ C_{18} Guard-PAK™ insert be used with the Dextro-PAK cartridge whenever samples containing proteins or high molecular weight carbohydrates (such as corn syrups) are analyzed. It is also useful to bring the filtered water mobile phase to a boil and maintain its temperature at 70-80°C. This will keep the mobile phase degassed and inhibit microbial growtn, thereby allowing the system to be run for extended periods of time without need for column cleaning, re-priming pumps, etc.