Waters Lab Highlights
An Internal Communication of Applications and Techniques

LAH 0080 12/82
Doc# M1021
AN/PA,/MD,QC/CH/SG

SWEETENERS IN PHARMACEUTICALS

The pharmaceutical industry utilizes sweeteners in a variety of its products. Toothpastes, mouthwashes, cough syrups and liquid vitamin formulations all contain sugars and/or artificial sweeteners (usually in the form of sodium saccharin). Two different modes of chromatography may be used to determine the wide variety of sweeteners used within the pharmaceutical industry. Ion exchange chromatography in the form of the Sugar-PAK™ 1 may be used to monitor sugars and sugar alcohols. Reverse-phase (C_{18}) chromatography is well suited for artificial sweeteners such as saccharin.

The Sugar-PAK™ 1 column provides a rapid, reliable separation of the various sugars used in such products. Figure 1 shows the separation of standards of the sugars and sugar alcohols. Figure 2 demonstrates the separation of sugars from a 1/100 (w/v) dilution of a name brand toothpaste. Both mannitol and sorbitol are present as sweeteners in this product. Figure 3 is a chromatogram of sugar standards typically found in a cough syrup and Figure 4 represents the separation of these sugars from a cough syrup formulation.

Artificial sweeteners,such as saccharin, are routinely used in mouthwashes. Figure 5 illustrates how a µBONDAPAK™ C_{18} column may be used to separate standards of sodium saccharin as well as benzoic acid which is commonly present as a preservative. In Figure 6 we can see the results of the application of these chromatographic conditions to a mouthwash.

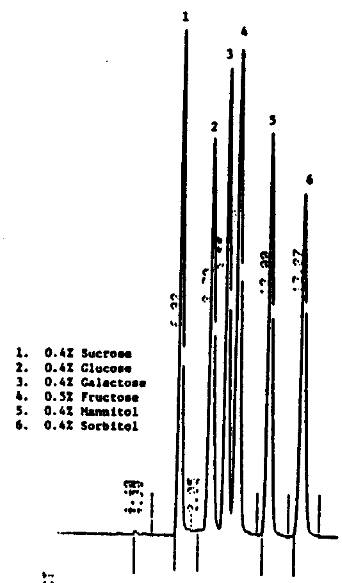

FIGURE 1

Conditions: Figures 1 and 2

Column:	Sugar-PAK™ 1 @ 90°C
Mobile Phase:	H_2O
Flow Rate:	0.5 ml/min
Detector:	M401 @ 16 X
Injection:	20 µl

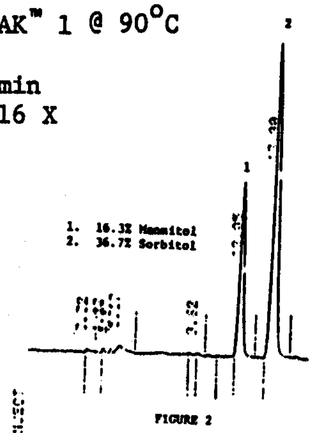

FIGURE 2

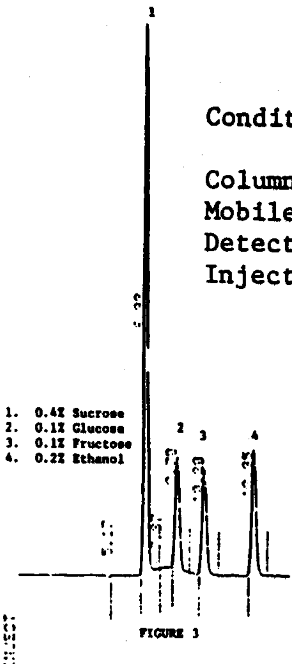

FIGURE 3

Conditions: Figures 3 and 4

Column:	Sugar-PAK™ 1 @ 90°C
Mobile Phase:	0.5 ml/min
Detector:	M401 @ 16X
Injection:	20 µl

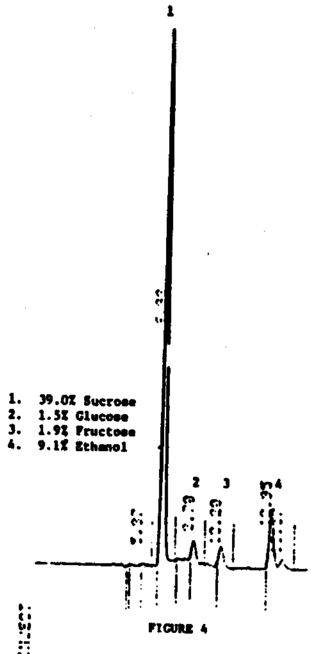

FIGURE 4

Conditions: Figures 5 and 6

Column:	µBONDAPAK™ C_{18} Radial-PAK™ Cartridge
Mobile Phase:	10/90 CH_3CN/H_2O w/2.0% Ammonium Acetate and 2.5% Glacial Acetic Acid
Flow Rate:	4.0 ml/min
Detector:	M440 254 nm @ 0.1 AUFS
Injection:	10 µl

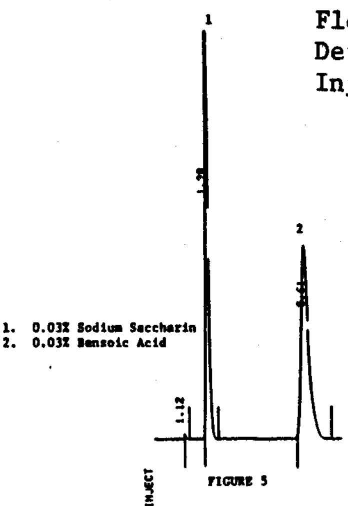

FIGURE 5

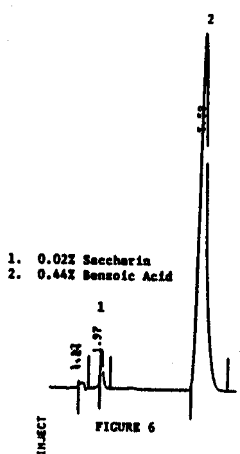

FIGURE 6

John Morawski