



## Continuous Chromatographic Separation of Salt from Sugars by Simulated Moving Bed Technology (SMB) using Orochem Zucchero™ Columns

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Simulated Moving Bed technology (SMB) is a continuous chromatography technique widely used in the pharmaceutical/biotechnology industry. The continuous chromatographic separation of sodium sulphate ( $\text{Na}_2\text{SO}_4$ ) from a mixture of glucose and mannose was established by using the Orochem Zucchero SMB technology. The main advantages of SMB over batch chromatography include better yields, higher purity, and decreased solvent usage which together make the SMB technology economically viable and ideal for desalting applications.

### Experimental condition

#### SMB system

Orochem SMB system equipped with eight Zucchero -  $\text{Na}^+$  columns.

Columns : Zucchero  $\text{Na}^+$ , 100 x 20mm

Eluent : DI Water

Temperature : 65°C

Feed rate : 2mL/min (10%  $\text{Na}_2\text{SO}_4$  / 5% Glucose+ Mannose)

#### Analytical

Equipment : HP 1090 HPLC system

Column : Zucchero, 300 x 7.2mm

Eluent : 0.009N  $\text{H}_2\text{SO}_4$  in water.

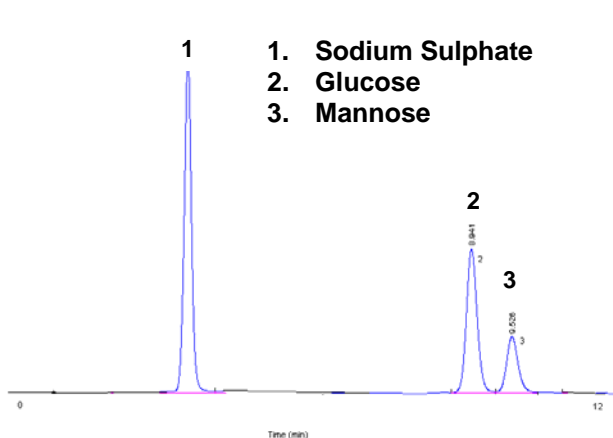
Detection : RI

Inj volume : 15 $\mu\text{L}$

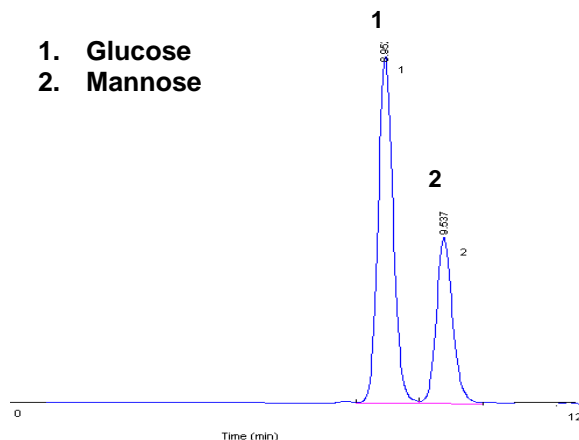


#### Results and conclusion

The chromatograms show that a good separation of salt and the sugar was achieved by using the SMB system. The measured recovery of this process was 95% and the measured purity was 99.9%. This system will be a useful tool for companies in pharmaceutical and biotechnology Industries.



*Figure 1: Chromatogram of feed (sodium sulphate, glucose and mannose)*



*Figure 2 : Chromatogram of extract (glucose + mannose)*