

## Separation simulation of L-ribose and L-arabinose in 3-zone SMB (simulated moving bed) chromatography

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The use of L-carbohydrates and their corresponding nucleosides in medicinal application has greatly increased. For example L-ribose has been much in demand as the starting material for curing hepatitis B.

SMB was invented by UOP in the early 1960s, and the SMB utilized the movement of ports or columns to mimic a counter-current movement of liquid and solid phase. The classical closed-loop 4-zone SMB approach reduces solvent consumption, but there can be occurred a risk of cross-contamination or mechanical damage in lines due to high pressure. In the open-loop 3-zone SMB, the recycle line of eluent be removed and the SMB consumes more solvent. However it can reduce the risk of cross-contamination or mechanical damage compared to the 4-zone SMB.

In this study, we carried out simulations of the separation of L-ribose and L-arabinose in 3-zone SMB for the operating points in the so-called  $m_2$ - $m_3$  plane from triangle theory using Aspen chromatography.

### Acknowledgement

This research was supported by Korea Energy Management Corporation as well as the BSEP ERC of Inha University.