Separation characteristics of mandelic acid in SMB(Simulated Moving Bed) chromatography

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Mandelic acid has a asymmetric carbon atom and thus has two chiral isomers: D-, L-. Only D-mandelic acid is pharmaceutically active such as antibacterial agent, antiaging agent and diuretics. Simulated moving bed (SMB) chromatography is a suitable process for continuous separation of chiral compounds. However, SMB operation is a formidable task since it is a periodic cyclic process. To find optimal separation condition in SMB, we performed simulations in m2-m3 plane base on the triangle theory and calculated operating parameters (flow rates of four zones, switching time and feed concentration and so on) using Aspen chromatography. we compared the simulation with experimental results for determining SMB operating parameters and optimal condition.

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