

Separation of D-Psicose and D-Fructose Using Simulated Moving Bed

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D-psicose was approved rare sugar as the definition of The International Society of Rare Sugars. Generally, Rare sugars have much potential for medical purpose. Many functions of D-psicose were also reported such as immunosuppressant in allogeneic orthotopic liver translation in rats, potential inhibitors of various glycosidases, potential inhibitors in ischemia-reperfusion injury of the rat liver, and low-calorie sweetener.

D-psicose is epimerized from D-fructose by enzyme reaction. The enzymes, such as D-tagatose-3-epimerase and D-psicose-3-epimerase have been reported in several researches. Because these enzyme are necessary the specific pH condition for the optimal reaction, the several kinds of pH-buffer were used in almost researches.

In this study, several experiments to remove pH-buffer efficiently were performed. The frontal analysis were performed to estimate the isotherm parameters of D-psicose and D-fructose. The SMB process to purify D-psicose from D-fructose was designed and simulated using Aspen Chromatography.