Separation of D-psicose and D-fructose mixture using Simulated Moving Bed Chromatography: Deashing process

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Separation of D-psicose from the binary mixture of the enzymatic reaction with the continuous chromatography of Simulated Moving Bed technique is studied in this work. D-psicose, which is a rare sugar used as a valuable pharmaceutical, has recently produced by using a specific enzyme to convert D-fructose into D-psicose. To separate D-psicose from D-fructose, a set of ion exchange resin including Optipore SD-2, Dowex Monosphere 88 and Dowex Monosphere 66 were used to remove buffer and other contaminants from sugar mixture solution, and then, Dowex 50WX4-400 mesh ion exchange resin was used for the separation process of SMB. A design of laboratory scale four-zone SMB using 8 columns (I.D.= 25 mm, L= 300 mm) are constructed in the 2-2-2-2 configuration, and operation parameters was determined basing on Triangle Theory proposed by Morbidelli. The purity and yield of D-psicose product are required more than 99% purity and 95% yield.