

### Simulation of Immunoglobulin Yolk Purification by Simulated Moving Bed

송성문, 김인호\*  
충남대학교  
(ihkim@cnu.ac.kr\*)

IgY (Immunoglobulin Yolk) is a specific antibody in egg yolk, and it protects human body from virus and antigen. There are a lot of egg yolk components such as lipoprotein and protein. To separate IgY, HPLC (High Performance Liquid Chromatography) and precipitation were used in a batch mode and SMB (Simulated Moving Bed) was adopted for continuous purification of yolk proteins.

IgY and other proteins in yolk were separated by using three-zone SMB chromatography. Before performing SMB experiments, batch chromatography and PIM (pulse input method) were performed to find operation parameters and adsorption isotherms. The results of batch chromatography were compared with simulated results using Aspen chromatography. To find the most suitable separation condition in SMB chromatography, simulations in  $m_2$ - $m_3$  plane on the triangle theory were carried out.  $m_2 = 0.18$ ,  $m_3 = 1.0$  and  $\Delta t = 419$  s are the best conditions for the highest purity of IgY. With this operating parameters (flow rate in three zone and switching time), the purity of raffinate results in 98.39 % from Aspen chromatography simulation. Most of the simulation reached steady-state with in second recycle.