

## Production and characterization of human caseinomacropeptide from recombinant yeast

김유진, 설은희<sup>1</sup>, 박성훈<sup>1,\*</sup>

섬진EST(주) 부설연구소; <sup>1</sup>부산대학교 화학공학과  
(parksh@pusan.ac.kr\*)

Caseinomacropeptide (CMP) is a polypeptide of 64 amino acid residues (106 - 169) derived from the C-terminal part of mammalian milk  $\kappa$ -casein. This macropeptide has various biological activities and is used as a functional food ingredient as well as a pharmaceutical compound. The gene encoding the human caseinomacropeptide (hCMP) was synthesized and expressed with an  $\alpha$ -factor secretion signal in *Saccharomyces cerevisiae*. The complete polypeptide of the recombinant hCMP (rhCMP) was produced and secreted in a culture medium. In a fed-batch bioreactor culture, 2.5 g/l of the rhCMP was obtained at 97 h. By sequential molecular cut-off ultrafiltration and anion-exchange chromatography, the rhCMP in the culture medium could be purified to HPLC purity over 94%. The authenticity of the purified rhCMP was confirmed by sequence analysis of N-terminal amino acids. The glycosylation of the rhCMP was analyzed by glyco-staining, deglycosylation and HPLC analyses. Commercially-available bovine CMP (bCMP) was used as a control since the authentic hCMP was not available. The rhCMP was estimated to be 7.0 kDa by SDS-PAGE, and showed a lower glycosylation than the natural bCMP.