The influence of glycosylation on secretion, stability, and immunogenicity of recombinant HBV pre-S antigen synthesized in *Saccharomyces cerevisiae*

박진승, 이지원*, 문제영[1], 김기용[1], 문홍모[1]
고려대학교 화공생명공학과; [1]두비엘
(leejw@korea.ac.kr*)

Three types of recombinant pre-S antigens (i.e., pre-S1S2) of hepatitis B virus (HBV) were synthesized in *Saccharomyces cerevisiae* and secreted into medium : wild type (pre-S1S2) and two mutant antigens, pre-S1°S2 (Asn15Gln) and pre-S1°S2° (Asn15Gln, Asn123Gln). The recombinant pre-S1S2 and pre-S1°S2 were secreted in the hyper-mannosylated form, while the recombinant pre-S1°S2° was produced without N-glycosylation. It has been demonstrated that the two particular N-linked glycans at Asn15 and Asn123 interfered with the B-cell response to the HBV-derived pre-S1S2, resulting in low titers of pre-S1S2-neutralizing antibodies. This problem was overcome by eliminating both of the N-glycosylation signals. But, the recombinant pre-S1°S2° showed two major problems: (1) inefficient Kex2 cleavage in the secretory pathway and (2) the proteolytic degradation by yeast proteases. The efficiency of Kex2 cleavage increased dramatically by removing N-glycosylation signal in the synthetic prosequence, but the proteolysis of pre-S1°S2° was somewhat inevitable.