N-Glycan structures of human transferrin produced by *Lymantria dispar* (Gypsy moth) cells using the LdMNPV expression system

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Abstract

N-Glycan structures of recombinant human serum transferrin (hTf) expressed by *Lymantria dispar* (Gypsy moth) 652Y cells were determined. The gene encoding hTf was incorporated into a *Lymantria dispar* nucleopolyhedrovirus (LdMNPV) under the control of the polyhedrin promoter. This virus was then used to infect Ld652Y cells and the recombinant protein was harvested at 120 hours post-infection. N-Glycans were released from the purified recombinant human serum transferrin, derivatized with 2-aminopyridine, and the glycan structures were analyzed by a two-dimensional HPLC and MALDI-TOF mass spectrometry. Structures of eleven glycans (88.8 % of total N-glycans) were elucidated. The glycan analysis revealed that the most abundant glycans were Man1-3(±Fucα6) GlcNAc2 (75.5%) and GlcNAcMan3(±Fucα6)GlcNAc2 (7.4%). There was only ~6% of high-mannose type glycans identified. Nearly half (49.8%) of the total N-glycans contained α(1,6)-fucosylation on the Asnlinked GlcNAc residue. However α (1,3)-fucosylation on the same GlcNAc, often found in Nglycans produced by other insects and insect cells, was not detected. Inclusion of fetal bovine serum in culture media had little effect on the N-glycan structures of the recombinant human serum transferrin obtained.

References

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