

Elucidation of Novel Glycan Function That Promotes an α -Helix Formation of Peptides

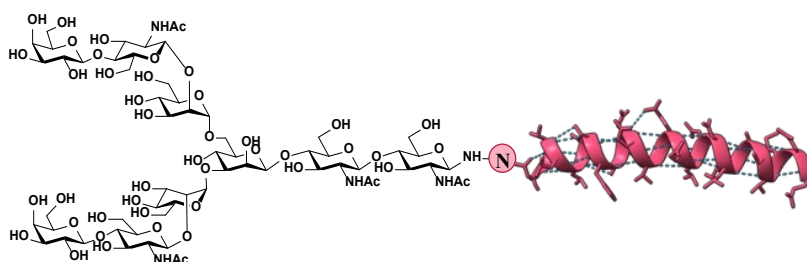
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Among protein modifications, glycosylation is one of the most abundant modifications in nature. Several glycan functions have been widely reported, particularly in relation to the stabilities, activities, and properties of proteins. Previously, Kajihara's group found that glycan can enhance the α -helix formation of glucagon and exenatide.^{1,2} However, the underlying mechanisms of this phenomena remain unclear. Here, we conducted a detail study on the role of glycan in promoting the secondary structure of peptides, specifically focusing on the α -helix formation.

We have been investigating the glycan functions on glycopeptide using homogeneous glycopeptides obtained through chemical synthesis. For this purpose, several peptide fragments of proteins and their glycosylated forms consisting of less than 30 amino acids were chemically synthesized using Fmoc solid-phase synthesis (Fmoc-SPPS) method.

Using synthesized peptides and their glycosylated forms, the secondary structures were evaluated by circular dichroism (CD) spectroscopy and nuclear magnetic resonance (NMR) measurement. Particularly, the detailed comparisons were examined between peptides with glycan and without glycan. As a results, we found that glycans influence the secondary structure formation of peptides. In this presentation, we present a comprehensive discussion of this glycan function.



1) Liu, M. *et. al*; *Bioconjug. Chem.* **2021**, 32, 2148-2153. 2) Chandrashekar, C. *et. al*; *Bioconjug. Chem.* **2023**, 34, 1014-1018.