ELUCIDATION OF NOVEL GLYCAN FUNCTIONS THAT PROMOTE THE α-HELIX FORMATION OF PEPTIDE

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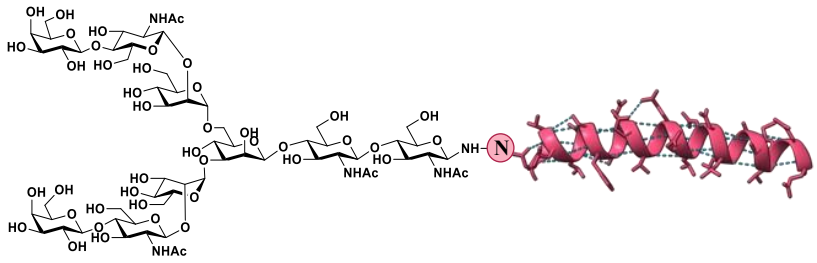
Among protein modifications, glycosylation is one of the most abundant modifications in nature. Several glycan functions have been widely reported, particularly in relation to the stabilities, activities, and properties of proteins. Previously, Kajihara's group found that glycan can enhance the α-helix 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 by using homogeneous glycopeptides obtained through the chemical synthesis. For this purpose, several peptide fragments of proteins and their glycosylated forms consisting of less than 30 amino acid residues were chemically synthesized by using Fmoc Solid-Phase Synthesis (Fmoc-SPPS) protocol. Using these synthesized peptides and glycosylated peptides, the peptide secondary structures were evaluated by Circular Dichroism (CD) spectroscopy and Nuclear Magnetic Resonance (NMR), including 1-Dimensional and 2-Dimensional NMR. Particularly, the detailed comparisons were examined between peptides with glycan and without glycan. As a results, we found that glycans influence the peptide secondary structure formation. In this presentation, we present a comprehensive discussion of this glycan function.



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