O-GLYCOSYLATION PATTERNS IN POST-VIRAL FATIGUE SYNDROME: SIALIC ACID-PRESERVING CHEMICAL RELEASE

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Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) is a complex inflammatory condition characterized by chronic fatigue, post-exertional malaise, and immune dysregulation whose underlying mechanisms remain poorly understood. Glycosylation, the process of attaching glycans to proteins and lipids, plays a crucial role in immune cell communication and inflammation [1]. As sialic acid has great importance in autoimmune and inflammatory diseases, the focus was directed towards a controlled release and labelling reaction with all conditions avoiding acidic hydrolysis of sialic acid [Figure 1.].
O-glycan from blood sera and purified antibodies where methyl amidated to stabilize sialic acid [2]. The release reaction proceeds via non-reductive β-elimination and subsequent labelling with a fluorescent compound in conditions able to conserve sialic acid in antennary position. The O-glycan profiles are analyzed by HPLC with fluorescence and MALDI mass spectrometry.
O-glycosylation profiles with intact sialylation of ME/CFS patients and healthy controls reveal an altered O-Glycan pattern which may contribute to the chronic inflammatory state observed in ME/CFS.

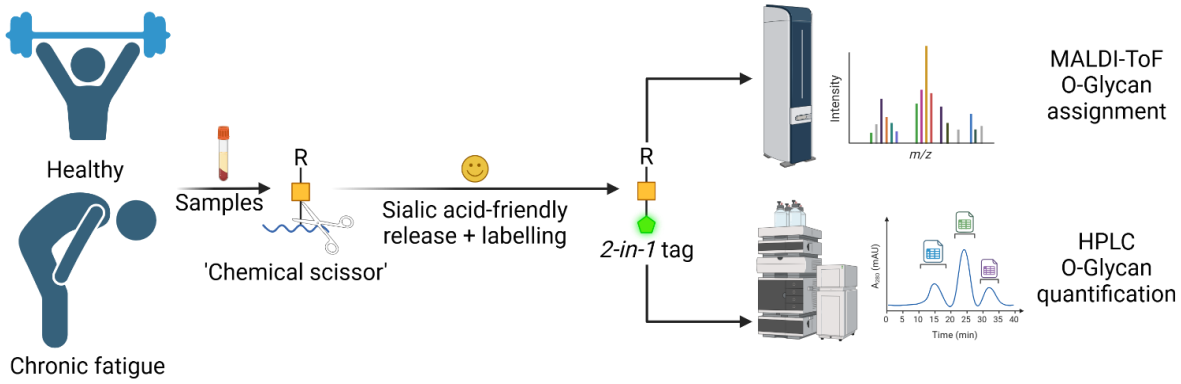

Figure 1. Graphical abstract. O-Glycans from blood serum and antibodies were analyzed from patients and healthy controls using a novel release and labelling method. Image created with BioRender.

References:
1. Rohrhofer, J., et al., *Immunological Patient Stratification in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome.* Journal of Clinical Medicine, **2024**. 13(1): p. 275.
2. Ret, D., et al., *DMTMM-mediated methylamidation for MALDI mass spectrometry analysis of N-glycans with structurally conserved sialic acid residues in biological fluids "via direttissima".* Talanta, **2022**. 242: p. 123326.