Neurological disorders can be associated with protein glycosylation abnormalities, as induced by oxidative stress in the central nervous system. Rett syndrome (RTT) is a devastating genetic brain disorder, mainly caused by de novo loss-of-function mutations in the methyl-CpG binding protein 2 (MECP2) gene. Although its pathogenesis appears to be closely associated with a redox imbalance, no information on glycosylation is available. It is well known that N-linked glycans influence a spectrum of biological process and protein functions in brain (1).

Glycoprotein detection strategies (i.e., lectin-blotting) were applied to identify target glycosylation changes in the whole brain of MeCP2 mutant murine models of the disease. Remarkable glycosylation pattern changes for a peculiar 50 kDa protein i.e., the N-linked brain nucleotide pyrophosphatase-5 (NPP-5), belonging to the nucleotide pyrophosphatases/phosphodiesterases family, were evidenced (2). In particular, a decreased N-glycosylation in the presymptomatic and symptomatic mutant mice was observed. Glycosylation changes were rescued by selected brain MeCP2 reactivation. Our findings indicate that there is a causal link between the amount of MeCP2 and the N-glycosylation of NPP-5.

References
1 Scott H, Panin VM, Glycobiology 2014;24:407-17.

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