

CURATION INTERFACE (only available on local MCW server)

Data Input

Restore hidden

#24744147,false_pmids
#24744147,;

5 Save Update

Hide Run NN

1 review pending

1

O-GlcNAcylation stabilizes β -catenin through direct competition with phosphorylation at threonine 41
Olivier-Van Stichelen et al., The FASEB Journal 2021 (24744147)
[Download PDF](#)

Dysfunctions in Wnt signaling increase β -catenin stability and are associated with cancers, including colorectal cancer. In addition, β -catenin degradation is decreased by nutrient-dependent O-GlcNAcylation. Human colon tumors and colons from mice fed high-carbohydrate diets exhibited higher amounts of β -catenin and O-GlcNAc relative to healthy tissues and mice fed a standard diet, respectively. Administration of the O-GlcNAcase inhibitor thiamet G to mice also increased colonic expression of β -catenin. By ETD-MS/MS, we identified 4 O-GlcNAcylation sites at the N terminus of β -catenin (S23/T40/T41/T112). Furthermore, mutation of serine and threonine residues within the D box of β -catenin reduced O-GlcNAcylation by 75%. Interestingly, elevating O-GlcNAcylation in human colon cell lines drastically reduced phosphorylation at T41, a key residue of the D box responsible for β -catenin stability. Analyses of β -catenin O-GlcNAcylation mutants reinforced T41 as the most crucial residue that controls the β -catenin degradation rate. [...]

2 Aggregated Predictions: 1.00 +/- 0.00 - Independent Models: [1,1,1,1,1]

3 Key Proteins, Species & Methods

4 Key O-GlcNAc Sentences

3

PROTEINS:
P35222 (BCATENIN): 131
XOGT (OGT): 11 [...]

STSITES:
T41: 21
S23: 14 [...]

SPECIES:
MOUSE (MICE): 9
HUMAN (HUMAN): 3 [...]

METHODS:
WB: 33
FLAG: 18 [...]

4

PROTEINS, O-GLCNAc, STSITES:
To determine whether O-GLCNAcylation competes with PHOSPHORYLATION to modify the catenin WE EXAMINED the LEVEL of OGLCNAcylation of BCATENIN in which S33 S37 T41 and S45 were replaced by ALA. [...]

PROTEINS, O-GLCNAc:
To answer this question WE INHIBITED O-GLCNAcylation by treatment of MCF7 cells with AC5SGLCNAc of OGT and tested the interaction of BCATENIN with ECADHERIN by COIMMUNOPRECIPITATION. [...]

PROTEINS, SPECIES:
To further characterize the relationship between O-GLCNAc and BCATENIN in profiled C57BL6 MICE. [...]