指導教授氏名 Instructing Professor Commissioned Professor	指導役割 Role
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学位論文要旨
Abstract of the Doctoral Dissertation

岡山大学大学院医歯薬学総合研究科

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論文題名 Title of Doctoral Dissertation: Inhibition of protein phosphatase 2A by okadaic acid induces translocation of nucleocytoplasmic O-GlcNAc transferase

プロテインホスファターゼ2Aの阻害はO-GlcNAc型糖鎖修飾酵素の核-細胞質移行を誘導する

論文内容の要旨（2000字程度） Summary of Dissertation (approx. 800 words)

Post-translational modification (PTM) is crucial for many biological events, such as the modulation of bone metabolism. Phosphorylation and O-GlcNAcylation are two examples of PTMs that can occur at the same site in the protein: serine and threonine residues. This phenomenon may cause crosstalk and possible interactions between the molecules involved. Protein phosphatase 2 A (PP2A) is widely expressed throughout the body andplays a major role in dephosphorylation. At the same location where PP2A acts, O-GlcNAc transferase (OGT) can introduce uridine diphosphate N-acetylglucosamine (UDP-GlcNAc) molecules and mediates O-GlcNAc modifications. To examine the effects of PP2A inhibitionon OGT localization and expression, osteoblastic MC3T3-E1 cells were treated with Okadaic Acid (OA), a potent PP2A inhibitor. In the control cells, OGT was strictly localized in the nucleus. However, OGT was observed diffusely in the cytoplasm of the OA-treated cells. This change in localization from the nucleus to the cytoplasm resulted from an increase in mitochondrial OGT expression and translocation of the nucleocytoplasmic isoform. Furthermore, knockdown of PP2A catalytic subunit α isoform (PP2ACα) significantly affected OGT expression ($p < 0.05$), and there was a correlation between PP2A Ca and OGT expression ($r = 0.93$). These results suggested a possible interaction between PP2A and OGT, which strengthens the notion of an interaction between phosphorylation and O-GlcNAcylation.