

**Supplementary Figure 13.** LPS-induced NF- $\kappa$ B-p65/IKK $\beta$  O-GlcNAcylation and subsequent NF- $\kappa$ B signaling activation in Caco-2 cells were blocked by BtGH84 and AkkGH84. Caco-2 cells were pre-treated with BtGH84, AkkGH84, BtGH84-2D or AkkGH84-2D, followed by LPS incubation. **(A)** Whole cell extracts were analyzed with immunoblots for O-GlcNAc, NF- $\kappa$ B-p65, IKK $\beta$  and I $\kappa$ B $\alpha$ .  $\beta$ -actin serves as a loading control. **(B)** O-GlcNAcylated proteins in Caco-2 were pulled down using sWGA beads. O-GlcNAc, NF- $\kappa$ B-p65, IKK $\beta$  and I $\kappa$ B $\alpha$  in the pull-down complexes were detected using immunoblots. **(C)** Whole cell extracts of Caco-2 were immunoprecipitated with anti-NF- $\kappa$ B-p65 or anti-IKK $\beta$  antibody. The O-GlcNAcylated NF- $\kappa$ B-p65 and IKK $\beta$  were detected using anti-O-GlcNAc antibody. **(D-F)** Cytosolic and nuclear sections were analyzed by immunoblots for I $\kappa$ B $\alpha$  and NF- $\kappa$ B-p65 respectively.  $\beta$ -actin serves as a loading control of cytosolic section; Histone-H3 serves as a loading control of nuclear. **(G)** Caco-2 were transfected with pGL3/NF- $\kappa$ B and pRL, followed by treated with BtGH84, AkkGH84, BtGH84-2D or AkkGH84-2D as described above. Afterward, cells were harvested for luciferase activity assay. **(H, I)** Pro-inflammatory cytokines levels in treated Caco-2.

