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Luteolin-7-O-α-glucoside inhibits invasion and suppresses TPA-induced MMP-9 and IL-8 expression via PKCα/ERK/AP-1/STAT3 mediated signaling pathway in MCF-7 breast cancer cells

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Luteolin-7-O-α-glucoside (named as LU7O-GS), a glycosylflavone of luteolin was isolated from cultured *Arthraxon hispidus* (Thunb). LU7O-GS is a derivative of luteolin which has anti-migratory and anti-invasive effect. However, nothing has been demonstrated about LU7O-GS. In this study, we demonstrated the anti-migratory and anti-invasive effects of LU7O-GS in 12-O-Tetradecanoylphorbol-13-acetate (TPA)-induced MCF-7 breast cancer cells. We also investigated the effect of LU7O-GS on the invasion related signal transducers including Extracellular signal Regulated Kinase (ERK), activator protein-1 (AP-1) and signal transducer and activator of transcription 3 (STAT3). LU7O-GS inhibited TPA-induced phosphorylation of ERK and nuclear translocation of AP-1 and STAT3 resulting in down-regulation of matrix metalloproteinase-9 (MMP-9) and IL-8 protein and mRNA levels in MCF-7 cells. These results indicate that LU7O-GS inhibits migratory and invasive responses in MCF-7 breast cancer cells by mitigating TPA-induced activation of ERK and nuclear translocation of AP-1 and STAT3. Therefore, LU7O-GS may be therapeutic as an anti-metastatic agent.

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