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Synthesis of C_3-Neoglycosides of digoxigenin and their anticancer activities

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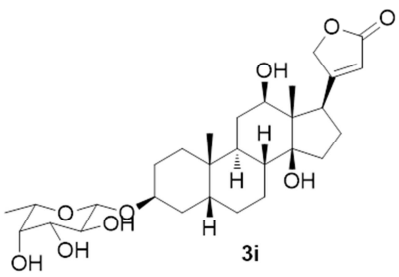
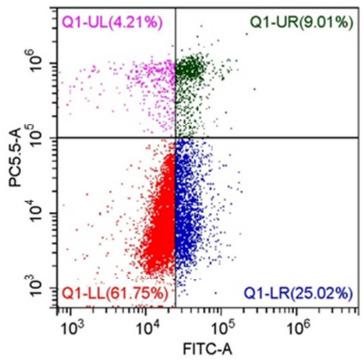
A series of C_3-*O*-neoglycosides and C_3-Me*O*-*N*-neoglycosides of digoxigenin were synthesized. The SAR analysis revealed that C_3-*O*-neoglycosides of digoxigenin exhibited stronger cytotoxicity and induction of Nur77 expression of tumor cells than C_3-Me*O*-*N*-neoglycosides. Among them, 3*β*-*O*-(*β*-L-fucopyranosyl)-digoxigenin (**3i**) showed the highest activity on induction of Nur77 expression and translocation from the nucleus to cytoplasm, leading to cancer cell apoptosis.

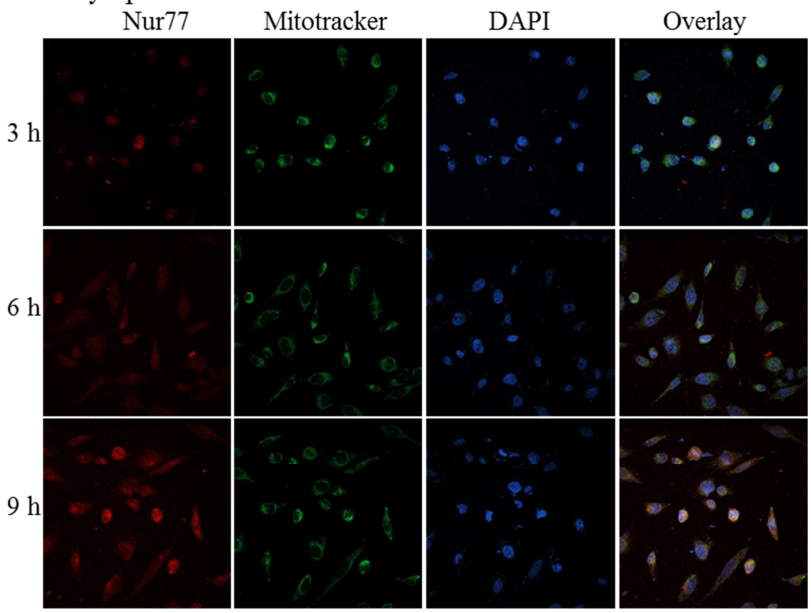


3i

Induction of apoptosis



Induction of Nur77 expression and its translocation to cytoplasm in NIH-H460 cancer cells



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