

Induction of cell death in breast cancer MDA-MB-231 by *H. cordata* Thunb. hexane fraction

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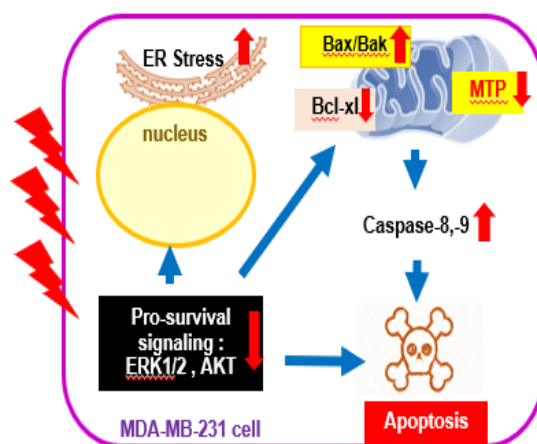
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Abstract: *Houttuynia cordata* Thunb. (Plu Kaow) is an herb use as food or ingredients in traditional medicine. The crude and fermented extract, which exhibited anti-cancer and anti-inflammation were used as food supplement. The ethanol extract (crude extract) of *H. cordata* powder were sub-sequentially fractionation with n-hexane to obtain H fraction. The GC-MS analysis of H fraction revealed the major compounds including α -linolenic acid (ALA), palmitic acid and some terpenoids group. The H fraction from dried *H. cordata* powder has never been studied for its cytotoxicity in breast cancer cells. In this study, MDA-MB-231, which is an invasive breast cancer with triple negative properties were investigated. H fraction inhibited MDA-MB-231 cells proliferation at IC_{50} = 289.53 μ g/ml. Next, the mode and mechanisms involving MDA-MB-231 cell death were investigated. Apoptotic cell death by annexin V-FITC/PI staining (Flow cytometry) was significantly increased in dose-response manner. CHOP expression indicated ER stress. Pro-survival AKT and ERK signaling were inhibited. Moreover, the reduction of mitochondrial transmembrane potential (MTP) along with increased of caspase -8 and -9 activity and enhanced of pro-apoptotic proteins (Bax, Bak) indicated MDA-MB-231 cells apoptosis.

Graphical abstract:



Keywords: *Houttuynia cordata*; cancer; cell deaths; apoptosis

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