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## Caspase-independent apoptosis induced by evening primrose extract in Ehrlich ascites tumor cells.

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### Abstract

We previously demonstrated that evening primrose extract (EPE) induced apoptosis in Ehrlich ascites tumor cells, while mouse embryo fibroblast cells (NIH3T3) used as a normal cell model, showed no effect of cell viability by treatment of EPE. Furthermore, our results demonstrated the rapid increase in intracellular peroxides levels, loss of mitochondrial membrane potential and the release of cytochrome c to cytosol, suggesting that the rapid increase in intracellular peroxides levels after addition of EPE triggers off induction of apoptosis. In this study, we identified that EPE elicited the translocation of Bax to mitochondria and apoptosis-inducing factor (AIF) to nuclei, but no activation of caspase-3-like protease. We also demonstrated that the rapid EPE-induced increase in hydrogen peroxide levels caused the translocation of Bax to mitochondria, and then mitochondrial cytochrome c was released. One of the main consequences of mitochondrial cytochrome c release is the activation of caspase-3. However, no caspase-3 activation was observed. On the other hand, AIF was translocated from mitochondria to nuclei. The EPE-induced translocation of AIF was suppressed with the addition of catalase, suggesting that the rapid intracellular peroxide levels after addition of EPE triggers off induction of apoptosis, which is AIF-mediated and caspase-independent.

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