

인체백혈병 U937 세포에서 부처꽃 에탄올추출물에 의한 apoptosis 유도

안은정, 김철환, 정진우, 황병수, 서민정, 최경민, 신수영*

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Induction of Apoptosis by Ethanol Extract of *Lythrum anceps* (Koehne) Makino in Human Leukemia U937 Cells

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Purple loosestrife-*Lythrum anceps* (Koehne) Makino is a herbaceous perennial plant belonging to the Lythraceae family. It has been used for centuries in Korea and other Asian traditional medicine. It has been showed pharmacological effects, including anti-oxidant and anti-microbial effects. However, the mechanisms underlying its anti-cancer mechanisms are not yet understood. In this study, we investigated the mechanism of apoptosis signaling pathways by ethanol extract of *Lythrum anceps* (Koehne) Makino (ELM) in human leukemia U937 cells. Treatment with ELM significantly inhibited cell growth in a dose-dependent manner by inducing apoptosis, as evidenced by the formation of apoptotic bodies (ApoBDs), DNA fragmentation and increased populations of sub-G1 ratio. Induction of apoptosis by ELM was connected with up-regulation of death receptor (DR) 4 and DR5, pro-apoptotic Bax protein expression and down-regulation of anti-apoptotic Bcl-2 protein, and inhibitor of apoptosis protein (IAP) family proteins (XIAP, cIAP-1, survivin), depending on dosage. This induction was associated with Bid truncation, mitochondrial dysfunction, proteolytic activation of caspases (-3, -8 and -9) and cleavage of poly(ADP-ribose) polymerase protein. Therefore, our data indicate that ELM suppresses U937 cell growth by activating the intrinsic and extrinsic apoptosis pathways, and thus may have applications as a potential source for an anti-leukemic chemotherapeutic agent.

Key words: *Lythrum anceps* (Koehne) Makino, Apoptosis, Caspase, Leukemia U937 cells

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