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Apoptosis Activity of Persea declinata (Bl.) Kosterm Bark Methanolic Crude Extract

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Abstract : Persea declinata (Bl.) Kosterm is a member of the Lauraceae family, widely distributed in Southeast Asia. It is from the same genus with avocado (Persea americana Mill), which is widely consumed as food and for medicinal purposes. In the present study, we examined the anticancer properties of Persea declinata (Bl.) Kosterm bark methanolic crude extract (PDM). PDM exhibited a potent antiproliferative effect in MCF-7 human breast cancer cells, with an IC50 value of 16.68 µg/mL after 48h of treatment. We observed that PDM caused cell cycle arrest and subsequent apoptosis in MCF-7 cells, as exhibited by increased population at G0/G1 phase, higher lactate dehydrogenase (LDH) release, and DNA fragmentation. Mechanistic studies showed that PDM caused significant elevation in ROS production, leading to perturbation of mitochondrial membrane potential, cell permeability, and activation of caspases-3/7. On the other hand, real-time PCR and Western blot analysis showed that PDM treatment increased the expression of the proapoptotic molecule, Bax, but decreased the expression of prosurvival proteins, Bcl-2 and Bcl-xL, in a dose-dependent manner. These findings imply that PDM could inhibit proliferation in MCF-7 cells via cell cycle arrest and apoptosis induction, indicating its potential as a therapeutic agent worthy of further development.

Keywords : antiproliferative, apoptosis, MCF-7 human breast cancer, Persea declinata
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