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Antiproliferative and cytotoxic activities of furocoumarins of *Ducrosia anethifolia*

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Ducrosia anethifolia (DC.) Boiss. (Apiaceae) has been widely used in Iranian folk medicine. Based on literature data, furocoumarins are characteristic secondary metabolites of *D. anethifolia*. This work isolates and identifies the secondary metabolites from *D. anethifolia* and to study their antitumor and anti-multidrug resistance (MDR) activities. The CHCl₃ extract of the aerial parts was subjected to various chromatographic methods to isolate pure constituents. Structure elucidation of the compounds was performed by means of NMR experiments. Antiproliferative and cytotoxic activities of the isolated furocoumarins, as the main compounds, were tested on multidrug resistant and sensitive mouse L5178Y mouse T-lymphoma cell lines and the IC₅₀ values were determined. The inhibition of the cancer MDR efflux pump ABCB1 was evaluated by flow cytometry (at concentrations 2 and 20 µM). A checkerboard microplate method was applied to study the interactions of furocoumarins and doxorubicin. Thirteen pure compounds were isolated, nine furocoumarins namely, pabulenol (**1**), aviprin (**2**), oxypeucedanin (**3**), oxypeucedanin methanolate (**4**), prangol (**5**), imperatorin (**6**), isogospherol (**7**), heraclenin (**8**), heraclenol (**9**), along with vanillic aldehyde (**10**), harmine (**11**), 3-hydroxy- α -ionone (**12**), and 2-C-methyl-erythrytol (**13**). Oxypeucedanin showed the highest *in vitro* antiproliferative and cytotoxic activity against parent (IC₅₀ = 25.98 ± 1.27, 40.33 ± 0.63 µM) and multidrug resistant L5178Y mouse T-cell lymphoma cells (IC₅₀ = 28.89 ± 0.73, 66.68 ± 0.00 µM), respectively. Compounds **2**, **3**, **5**, **7**, **10-13** were identified for the first time from the *Ducrosia* genus. Oxypeucedanin is a promising compound for further investigations for its anticancer effects.

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