PHYTOCHEMICAL AND PHARMACOLOGICAL ANALYSIS OF TWO IRANIAN PLANTS, *DUCROSIA ANETHIFOLIA* AND *EREMURUS PERSICUS*

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Context: *Ducrosia anethifolia* (DC.) Boiss. (Apiaceae), is an Iranian medicinal plant and traditionally used as analgesic and remedy of anxiety and insomnia in Iranian folk medicine. *Eremurus persicus* (Jaub. & Spach) Boiss. (Xanthorrhoeaceae) is widely grown in diverse regions of Iran. The leaves have been traditionally used for treatment of constipation and diabetes, and to remedy of different disorders of liver, stomach and the genitourinary system [1,2].

Objective: This study was aimed at the isolation and identification of the secondary metabolites of *E. persicus* and *D. anethifolia* and the evaluation of the antitumor and anti-multidrug resistance activities of some of the pure compounds.

Materials and methods: Diverse chromatographic methods were applied to isolate the pure phytoconstituents from plant materials. Bioactivities were tested on multidrug resistant and sensitive mouse T-lymphoma cell lines. The inhibition of the cancer MDR efflux pump ABCB1 was investigated by flow cytometry (at 2 and 20 mM). A checkerboard microplate method was also utilized to study the interactions of furocoumarins and doxorubicin. Besides, toxicity was studied using normal murine NIH/3T3 fibroblasts.

Results: From *D. anethifolia*, thirteen isolated pure compounds were isolated, nine furocoumarins including pabulenol (**1**), (+)-oxypeucedanin hydrate (**2**), oxypeucedanin (**3**), oxypeucedanin methanolate (**4**), (-)-oxypeucedanin hydrate (**5**), imperatorin (**6**), isogospherol (**7**), heraclenin (**8**), heraclenol (**9**), along with vanillic aldehyde (**10**), harmine (**11**), 3-hydroxy-a-ionone (**12**) and 2-*C*-methyl-erythrytol (**13**) were identified [3]. From *E. persicus*, corchoionoside A (**14**), isoorientin (**15**), auraptene (**16**), and imperatorin (**6**) were isolated.

Oxypeucedanin showed the highest *in vitro* antiproliferative and cytotoxic activity against parent (IC_{50}: 25.98 ± 1.27, 40.33 ± 0.63 mM) and multidrug resistant cells (IC_{50}: 28.89 ± 0.73, 66.68 ± 0.00 mM), respectively, and exhibited slight toxicity on normal murine fibroblasts (IC_{50}: 57.18 ± 3.91 mM).

Discussion and conclusions: Compounds **2**, **3**, **5**, **7**, **10**–**13** were identified for the first time from the *Ducrosia* genus. All the compound isolated from *E. persicus* are reported for the first time from this taxon. From the tested furocoumarins, oxypeucedanin is a promising compound for its anticancer effects.

References

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