



Hexane fraction of roots and ethyl acetate fraction of fruits of *Astrodaucus persicus* extract showed potent antimalarial and cytotoxic activities

S. Goodarzi^{1*}, Z. Tofighi^{1,2}, P. Asgharian³, M. Nateghpour⁴, A. Hadjiakhoondi^{1,2}, A. Motevalli Haghi⁴, J. Mirzaei², R. Marefat²

¹Medicinal Plants Research Center, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran.

²Department of Pharmacognosy, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran.

³Department of Pharmacognosy, Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran.

⁴Department of Medical Parasitology and Mycology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran.

Background and objectives: Aerial parts and roots of *Astrodaucus persicus* (Apiaceae), a native plant of Iran, were investigated. The existence of compounds with 1, 3-benzodioxole structures has been confirmed in roots of this plant and different benzodioxole compounds have shown antimalarial and cytotoxic activities; therefore, present study has evaluated the antimalarial and cytotoxic effects of various extracts of fruits and roots fractions of *A. persicus*. **Methods:** Ripe fruits and roots of *A. persicus* were extracted with 80% methanol and fractionated by different solvents. Antimalarial activity of fractions against *Plasmodium berghei* was investigated in mice and parasitemia and suppression percentage were reported for each fraction. Cytotoxicity of fractions were determined by MTT assay against human breast adenocarcinoma; MCF-7, colorectal carcinoma; SW-480 and normal L-929 cell lines. **Results:** Hexane fraction of roots extract and ethyl acetate fraction of fruits extract at 500 mg/kg/day were the most active fractions exhibiting 73.3 and 72.3 % suppression on the fourth day, respectively. Hexane fraction of roots extract showed potent anticancer activities against breast (IC₅₀ of 0.01 µg/mL) and colorectal (IC₅₀ of 0.36 µg/mL) cancer cell lines compared to doxorubicin with IC₅₀ of 0.35 and 2.50 µg/mL, respectively. Cytotoxic activity of RHE on normal cell lines was almost equal to doxorubicin. **Conclusion:** The results of this study have shown potent antimalarial and cytotoxic effects of hexane roots fraction of *Astrodaucus persicus* extract. On the other hand, ethyl acetate fraction of fruits extract showed antimalarial activity with no cytotoxicity.

Keywords: *Astrodaucus persicus*, cytotoxicity, *Plasmodium berghei*

