



## Elucidation of compounds from toxic fraction of *Heracleum persicum* extract

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**Background and objectives:** *Heracleum persicum* (golpar) is a native medicinal plant of Iran which belongs to Apiaceae family. The fruits of the plant have been used as spice for flavoring. They have also showed carminative, antioxidant, anticonvulsant, analgesic, anti-inflammatory, immunomodulatory and cytotoxic properties. In this study, toxicity of different fractions of *Heracleum persicum* was evaluated and phytochemical compounds of toxic fraction(s) were elucidated. **Methods:** Ripe fruits of *H. persicum* were extracted with 80% methanol and fractionated by different solvents (hexane, chloroform, ethyl acetate and methanol). The toxicity of different fractions was evaluated by brine shrimp (*Artemia salina*) lethality test. This test has been provided by US National Cancer Institute and has been used to evaluate the toxic characteristics of different types of plant extracts, heavy metals, pesticides, food additives and medicinal compounds. The toxic fraction was selected for further purification until achievement of pure compounds. **Results:** The toxicity evaluation showed that 100 µg/mL of the chloroform fraction showed the highest (97%) lethality percentage. Four furanocoumarins were separated and identified from the chloroform fraction using different chromatographic techniques and were identified by <sup>1</sup>H-NMR, <sup>13</sup>C-NMR, 2D-NMR and MS spectroscopic methods. Elucidated compounds were bergapten, isopimpinellin, 5-(3-methyl but-2-enyloxy)-7H-furo-[2,3-f] chromen-7-one and 5-methoxy-7H-furo[2,3-f] chromen-7-one which the two last mentioned components were characterized for the first time. **Conclusion:** It was concluded that furanocoumarins of *H. persicum* could be introduced as cytotoxic compounds.

**Keywords:** brine shrimp, furanocoumarin, *Heracleum persicum*