

Phytochemical study and biological activity of *Pedicularis wilhelmsiana* Fisch.ex

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Background and Aims: As a folk medicinal herb, *Pedicularis* is one of medicinal plants which have different therapeutic effects. Most studies on *Pedicularis* have only been carried out on Chinese species and there has been no research on *Pedicularis wilhelmsiana* which grows in Azerbaijan/Iran. This investigation is about phytochemical study, antioxidant, antibacterial and cytotoxic activities of *P. wilhelmsiana* which grows in Azerbaijan/Iran and has demonstrated a lot of therapeutic effects.

Methods: Reverse phase HPLC analysis and H-C NMR were used for purification and identification of compounds. DPPH assay, agar well diffusion method and brine shrimp lethality test were carried out to determine antioxidant, antibacterial and cytotoxic activity of the methanolic extract.

Results: Phytochemical study of aerial parts of *Pedicularis wilhelmsiana* afforded two phenylethanoids (verbascoside and martynoside) and three iridoids (Aucubin, ipolamiid, 5-hydroxy-8-epi-loganin) and two flavonoids (luteolin, 7-glucoluteolin) along with mannitol on the basis of spectral evidences. Methanolic extract showed better antioxidant activity than other crude extracts. 40% and 60% hydroalcoholic fractions showed good DPPH scavenging activity due to presence of phenolic compounds. Methanolic extract was found to be active against *P. aeruginosa*, *S. ureus*, *S. epidermidis*, *M. luteus*. Antibacterial test of the different fractions also demonstrated that 40% and 60% fractions were more active than crude extract and other fractions. No cytotoxic effect was detected from this plant by brine shrimp lethality test.

Conclusions: Antibacterial and antioxidant activity of this plant supports further studies related to antibiotic potential of the plant which is also a good source of antioxidant reagents.

Keywords: *Pedicularis wilhelmsiana*; Phytochemical and biological activity