Antimalarial assessment of Viola odorata L. by heme polymerization inhibition method

A. Salimi¹, S. Esmaeili²*, M. Hamzeloo-Moghadam³, M. Irani², S. Mohammadi Motamed¹

¹Department of Pharmacognosy, Faculty of Pharmacy, Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran (IAUPS).
²Traditional Medicine and Materia Medica Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
³Department of Traditional Pharmacy, School of Traditional Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Background and objectives: Viola odorata L. is a grassy plant that grows in the humid regions and has been used to treat liver diseases and complicated and tropical fevers in Iranian traditional medicine (ITM). V. odorata has cold and humid temperament while the temperament of fever which is the most important symptom of malaria is the opposite. Antimalarial activity of the petroleum ether fraction of V. websteri has been reported through pLDH method in vitro. In this study, the antimalarial effect of V. odorata which has been used for the treatment of fever in ITM has been evaluated by heme polymerization inhibition method. Methods: The fractions were prepared through maceration during four consecutive days using petroleum ether, chloroform, methanol and water; each day the mixture was filtered and the next fresh solvent was added to the dry plant residue. The heme polymerization inhibition method was carried out in 96-wells plate at the concentration of 200 μg/mL for each sample. The absorbance was recorded at 405 nm with an ELISA reader and the heme polymerization inhibition was determined. Results: The results demonstrated that the petroleum ether, chloroform, methanol and aqueous fractions of V. odorata inhibited heme polymerization up to 62, 77, 100 and 53%, respectively while the methanol fraction of V. odorata showed the most considerable results. Conclusion: The results introduced the methanol fraction of V. odorata L. as a proper candidate for further antimalarial studies.

Keywords: antimalaria, heme polymerization inhibition, Iranian traditional medicine, Viola odorata