

Perovskone, a Potential Antiplasmodial Lead Compound from *Salvia hydrangea*; Derivatization and Quantification

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Abstract

Perovskone (1) was isolated as an antiplasmodial lead from *Salvia hydrangea*, semisynthetic derivatization of (1) let to find more potent antiplasmodial compound (2) (IC₅₀=0.08 μM, SI=83.8). The perovskone content in leaves and flowers was 0.053% and 0.04% of dried weight of plant material, respectively.

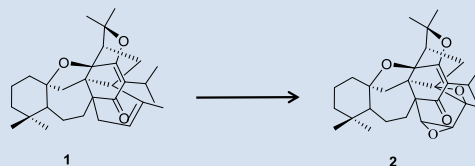
Introduction: Malaria, caused by five different *Plasmodium* species, is the most virulent tropical parasitic disease. According to latest WHO estimates, 212 million cases of malaria and 429 deaths have been reported in 2015. Artemisinin-resistant *P. falciparum* strains have been detected in some countries recently, which is really problematic and illustrates the urgent need for new drugs or lead structures.

Natural products have served as a major source of drugs for centuries, and about half of the pharmaceuticals in use today are derived from natural products.

As a part of an ongoing screening for new antiplasmodial natural products, an *n*-hexane extract of *S. hydrangea* showed promising activity with the IC₅₀ value of 3.2 μg/mL.

S. hydrangea distributed widely in Iran. Preparations from flowers serve as an anthelmintic and antileishmanial in the Pars province. Large scale isolation of the *n*-hexane extract led to (1). Herein we report on the isolation, derivatization and quantification of (1) together with in vitro antiplasmodial activity.

Methods and Results: Fractionation of the *n*-hexane extract by open column chromatography on silica gel afforded (1) as a major constituent. It has shown potent in vitro antiplasmodial activity with IC₅₀ value of 0.19 μM and selectivity index (SI) of 169.5. The semisynthetic derivatization of (1) resulted compound (2). As for (2) antiplasmodial activity was improved in comparison with (1). The perovskone content of different parts of plant (leaves and flowers) was analyzed by HPLC using UV detection. Its level in leaves and flowers was 0.053% and 0.04% of dried weight of plant material, respectively.



Conclusions: Perovskone, a major constituent from *S. hydrangea*, can be considered as a potential antiplasmodial lead compound. In order to find more potent antiplasmodial semisynthetic derivatives and mechanism of action as well as in vivo examinations, further studies are suggested.

Key words: *Salvia hydrangea*; *Plasmodium falciparum*; Perovskone; Semisynthetic derivatization