Antimalarial and Antimycobacterial Activities of Dimeric naphthoquinone from *Diospyros glandulosa* and *Diospyros rhodocalyx*

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ABSTRACT

Lupeol (1), β-sitosterol (2), stigmasterol (3) and diospyrin (4) were isolated from the woods of Diospyros glandulosa and Diospyros rhodocalyx (Ebenaceae), while betulinaldehyde (5) was obtained only from D. rhodocalyx. Compounds 4 and 5 showed in vitro antimalarial activity against Plasmodium falciparum K1 with respective IC_{50} values of 3.29 and 6.25 µg/mL. In addition, compounds 4 and 5 also showed antimycobacterial activity with MIC values of 6.25 and 25 µg/mL, respectively.

Key words: *Diospyros glandulosa*, *Diospyros rhodocalyx*, Ebenaceae, Diospyrin, Antimalarial and antimycobacterial activities

INTRODUCTION

Malaria continues to be a growing health problem of global concern. According to the World Health Organization estimations, the number of clinical cases has reached 300-500 millions per year, most of which are in Africa. Increased geographical spreading of the disease is observed, mainly in Asia. In addition to a mortality rate of 1.1 to 2.7 million deaths per year (WHO, 1998), mostly among children, malaria puts a heavy economic burden on the developing countries by exhausting health system resources and by associated loss of economic activity. Only a limited number of chemotherapeutic agents for the treatment of malaria is available, and the growing problem of drug resistance makes adequate treatment of malaria increasingly difficult (WHO, 1998). In the absence of a functional, safe and widely-available malarial vaccine, efforts to develop new antimalarial drugs are profoundly important. Since the majority of the existing antimalarial chemotherapeutic agents are based on natural products (Ekthawatchai et al., 1999), biological chemodiversity continues to play an important role in the search that would lead to antimalarial drugs. Therefore, it is necessary to search for new compounds as back-up antimalarials. As a part of our continuous search for novel bioactive compounds from plant source, plants in the genus Diospyros are the rich sources of biologically-active metabolites (Kuo et al., 1997; Costa et al., 1998; Li et al., 1998; Mallavadhani et al., 1998; Likhitwitayawuid