



COVID-19



NATURAL PRODUCTS RESEARCH
FOR EASTERN AND CENTRAL
AFRICA-ZIMBABWE
(NAPRECA-ZIMBABWE)

Phytochemical investigation of *Pentas* species (Rubiaceae) towards management of malaria

Abiy Yenesew^a, Negera Abdissa^a, Milkyas Endale^a, Hoseah M. Akala^b and Máté Erdélyi^c

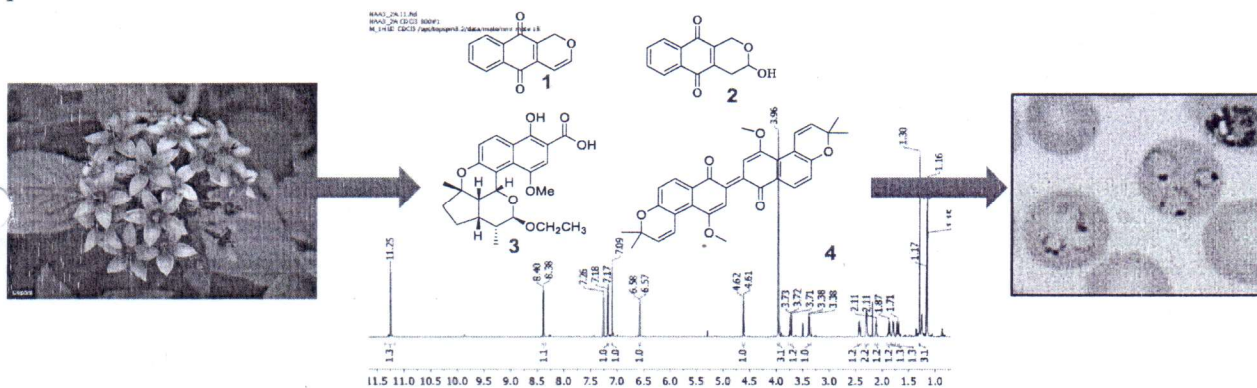
^aDepartment of Chemistry, University of Nairobi, P.O. Box 30197-00100, Nairobi, Kenya;

^bUnited States Army Medical Research Unit-Kenya, MRU 64109, APO, AE 09831-4109, United States;

^c Department of Chemistry and Molecular Biology, University of Gothenburg, SE-412 96 Gothenburg, Sweden.

*ayenesew@uonbi.ac.ke

According to some estimates, *malaria* is responsible for the death of half of all people who ever lived.¹ To date approximately 40% of the world's population is exposed to it² and out of the yearly 225 million clinical episodes, 781 000 are lethal. Malaria is the leading cause of mortality among African children under 5 years of age and of pregnant women. It has a serious economic impact through loss of commercial and labor outputs.^{2,3} In developing countries where malaria is prevalent, the efficacy of antimalarial drugs is declining rapidly. Moreover the few effective antimalarials available are unaffordable to the majority.^{4,5} Of the different approaches towards the management of malaria, chemotherapeutics remains the principal tool and will likely remain so in the near future.⁶ Since all first-line antimalarials are natural products or their derivatives,⁷ evaluation of plants which are used in indigenous medicines still is a promising route of novel antiplasmodial leads. *Pentas* species (Rubiaceae) are used in traditional medicine for the treatment of malaria in Africa and Asia. Our investigation on *P. longiflora* resulted in the identification of quinines of which pyranonaphthoquinones (**1**, **2**) showing potent antiplasmodial activity.⁷ Antiplasmodial anthraquinones were also isolated from the roots of *P. lanceolata*.⁷ From *Pentas bussei*, a plant which is used for treatment of malaria at the Kenyan we have isolated geranylated (**3**) and dimeric (**4**) naphthalene derivatives⁸. The structure elucidation by the use of advanced spectroscopic techniques and the antiplasmodial activities will be presented.



References ¹ *Curr. Med. Chem.* **2005**, *12*, 2539. ² *Malaria* **2006**, *5*, 76. ³ *Nature* **2002**, *415*, 680. ⁴ *Brit. Med. J.* **2004**, *329*, 1156. ⁵ *Adv. Parasit.* **2001**, *50*, 199. ⁶ *Nat. Rev. Drug Discov.* **2009**, *8*, 879-891. ⁷ *J.Nat. Prod.* **2012**, *75*, 1299. ⁸ *J. Nat. Prod.*, **2016**, *79*, pp 2181.