Antiprotozoal activity of Khaya anthotheca, (Welv.) C.D.C. A plant used by chimpanzees for self medication

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ETHNOPHARMACOLOGICAL RELEVANCE: Khaya species, endemic to Africa and Madagascar, continues to be valuable in indigenous traditional medicine. Their bitter tasting barks are decocted to treat fevers, several febrile conditions, microbial infections and worm infestations. In the Budongo rain forest of Western Uganda, non-human primates, especially chimpanzees and baboons, have been observed to eat the bitter non-nutritious bark and occasionally the seed. MATERIALS AND METHODS: Extracts were prepared by sequential fractionation with solvents of increasing polarities and assayed using standard procedures. Bioassay guided purification of the petroleum ether extract by column chromatography yielded three pure limonoids, Grandifolione (1), 7-deacetylkhivorin (2) and 1,3-deacetyldeoxyhavenensin (3). The antitrypanosomal, antileishmanial and antiplasmodial activities of pure compounds (1) and (2) were evaluated in vitro against Plasmodium falciparum K1, Trypanosoma brucei rhodesiense STIB 900, Trypanosoma cruzi trypomastigotes (Tulahuen C4), and axenic Leishmania donovani MHOMET-67/L82 and for cytotoxicity against L6 rat skeletal myoblast cells, in parallel with standard drugs. RESULTS: Of the four extracts tested, the petroleum ether extract showed activity against Plasmodium falciparum (IC50 0.955?g/ml) and Trypanosoma brucei rhodesiense (IC50 5.72?g/ml). The pure compounds (1) and (2) demonstrated activity against Plasmodium falciparum (KI strain) and marginal activities against Trypanosoma brucei brucei, Trypanosoma brucei rhodesiense, Trypanosoma cruzi and Leishmania donovani. CONCLUSION: The present study provides evidence justifying the use of Khaya preparations in traditional medicine to treat fevers and microbial infections. The observed antiprotozoal activity of grandifolione and 7-deacetylkhivorin from the seed of Khaya anthotheca further confirms the ethnomedicinal potential of this plant and supports the hypothesis that non-human hominids (chimpanzees and baboons) too, eat the bitter bark and seeds for self-medication and in general, the use of Khaya plant material for medication by humans in disease endemic tropical areas. The antiprotozoal activity of gradifolione, and, the antitrypanosomal and antileishmanial activities of 7-deacetylkhivorin are reported here for the first time.

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