

Publication

Antiprotozoal and antihelminthic properties of plants ingested by wild Japanese macaques (*Macaca fuscata yakui*) in Yakushima Island

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4517033

Author(s) Tasdemir, Deniz; MacIntosh, Andrew J. J.; Stergiou, Polyxeni; Kaiser, Marcel; Mansour, Nuha R.; Bickle, Quentin; Huffman, Michael A.**Author(s) at UniBasel** Kaiser, Marcel ;**Year** 2020**Title** Antiprotozoal and antihelminthic properties of plants ingested by wild Japanese macaques (*Macaca fuscata yakui*) in Yakushima Island**Journal** Journal of Ethnopharmacology**Volume** 247**Pages / Article-Number** 112270**Keywords** Antiprotozoal; Cytotoxicity; Feeding ecology; Macaque; Medicinal foods; Schistosoma; Self-medication

Primates forage on a variety of plant parts to balance their dietary intake to meet requirements of energy, nutrition and maintenance, however the reason(s) leading them to ingest some plants which have no nutritional value and/or contain bioactive or even toxic secondary metabolites is recently gaining closer attention. The growing literature suggests that primates consume plants for medicinal purposes (self-medication) as well, particularly when infected with parasites and pathogens (bacteria, viruses, microbes). Interestingly, some of the plants they consume are also used by humans for similar purposes or may have potential uses for humans.; As part of a 16-month study of the parasite ecology of a subspecies of Japanese macaques (*Macaca fuscata yakui*) on the island of Yakushima, we surveyed their feeding habits and collected a subset of plants and plant parts observed being ingested by macaques. The ethnomedicinal value of these plants was surveyed and methanolic extracts of 45 plant parts were tested in vitro against important parasites of humans, including four protozoan parasites *Plasmodium falciparum*, *Trypanosoma brucei rhodesiense*, *T. cruzi* and *Leishmania donovani*, and the trematode flatworm *Schistosoma mansoni*. Potential toxicity of the extracts was also assessed on mammalian cells.; A wide range of ethnomedicinal uses in Asia for these plants is noted, with 37% associated with the treatment of parasites, pathogens and related symptoms. Additionally, the 45 extracts tested showed broad and significant activity against our test organisms. All extracts were active against *T. b. rhodesiense*. The majority (over 80%) inhibited the growth of *P. falciparum* and *L. donovani*. Half of the extracts also displayed antiprotozoal potential against *T. cruzi* while only several extracts were active against both larval and adult stages of *S. mansoni*. Cytotoxicity was generally low, although several extracts lacked specific toxicity to test parasites.; Our results indicated a number of plants and their parts to have antiparasitic activity not previously reported in the ethnopharmacological literature. Enhanced understanding of the primate diets, particularly during periods of intensified parasite infection risk may help to further narrow down plants of interest for lead compound development. The study of animal self-medication is a complementary approach, with precedence, to drug discovery of new lead drug compounds against human parasitic diseases.

Publisher Elsevier**ISSN/ISBN** 0378-8741**edoc-URL** <https://edoc.unibas.ch/72982/>**Full Text on edoc** No;

Digital Object Identifier DOI 10.1016/j.jep.2019.112270
PubMed ID <http://www.ncbi.nlm.nih.gov/pubmed/31589965>
ISI-Number WOS:000497253400035
Document type (ISI) Journal Article