

Publication

Antiprotozoal activities of traditional medicinal plants from the Garhwal region of North West Himalaya, India

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Author(s) Dua, Virendra K; Verma, Gaurav; Agarwal, Dau Dayal; Kaiser, Marcel; Brun, Reto**Author(s) at UniBasel** [Kaiser, Marcel](#) ; [Brun, Reto](#) ;**Year** 2011**Title** Antiprotozoal activities of traditional medicinal plants from the Garhwal region of North West Himalaya, India**Journal** Journal of ethnopharmacology : an interdisciplinary journal devoted to bioscientific research on indigenous drugs**Volume** 136**Number** 1**Pages / Article-Number** 123-8**Keywords** Traditional medicinal plants, Garhwal region, Antiprotozoal activity, Plasmodium falciparum, Trypanosoma brucei rhodesiense, Leishmania donovani, Trypanosoma cruzi, Selectivity index, Herbal formulation

ETHNOPHARMACOLOGICAL RELEVANCE: In a search for new plant-derived biologically active compounds against protozoan parasites, an ethnopharmacological study was carried out to evaluate extracts from selected 17 traditional medicinal plants which were used by healers from the Garhwal region of North West Himalaya for the treatment of protozoal infections and fever including malaria. **MATERIALS AND METHODS:** In vitro activity against erythrocytic stages of Plasmodium falciparum was determined using a modified [3H]-hypoxanthine incorporation assay with the chloroquine- and pyrimethamine-resistant K1 strain. Activity against Trypanosoma brucei rhodesiense was performed on the STIB 900 strain and activity against Trypanosoma cruzi on infected rat skeletal myoblasts (L6 cells) seeded in 96-well microtitre plates while amastigotes of Leishmania donovani strain MHOM/ET/67/L82 were used to assess activity against Leishmania donovani. Cytotoxicity assays were performed against rat skeletal myoblasts (L6-cells). **RESULTS AND CONCLUSIONS:** Extracts of Artemisia roxburghiana, Roylea cinerea, Leucas cephalotes, Nepeta hindostana and Viola canescens showed good antiplasmodial activity ($IC_{50} < 5 \mu g/ml$). The chloroform extract of Artemisia roxburghiana was the most active (IC_{50} value of $0.42 \mu g/ml$) and the most selective ($SI=78$) extract for Plasmodium falciparum among all plants extracts examined. The chloroform extract of Leucas cephalotes and the petroleum ether extract of Viola canescens exhibited substantial activities against Leishmania donovani with IC_{50} values of $3.61 \mu g/ml$ ($SI=8$) and $0.40 \mu g/ml$ ($SI=30$), respectively. The petroleum ether extract of Viola canescens exhibited activity against Trypanosoma cruzi with an IC_{50} value of $1.86 \mu g/ml$ ($SI=7$). Methanol and water extracts from all plants under investigation were found inactive against all parasites tested. These results support investigation of components of traditional medicines as potential new antiprotozoal agents. On the other hand since herbalism has become the main stream throughout the world, investigation demonstrates that these non-polar plant extracts of six of the plants examined in this study could play an important role in herbal formulations for the treatment of vector borne protozoal diseases

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