









# Anti-infective activities of 11 plants species used in traditional medicine in Malaysia

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## Abstract

Treatment of drug resistant protozoa, bacteria, and viruses requires new drugs with alternative chemotypes. Such compounds could be found from Southeast Asian medicinal plants. The present study examines the cytotoxic, antileishmanial, and antiplasmodial effects of 11 ethnopharmacologically important plant species in Malaysia. Chloroform extracts were tested for their toxicity against MRC-5 cells and Leishmania donovani by MTT, and chloroquine-resistant Plasmodium falciparum K1 strain by Histidine-Rich Protein II ELISA assays. None of the extract tested was cytotoxic to MRC-5 cells. Extracts of Uvaria grandiflora, Chilocarpus costatus, Tabernaemontana peduncularis, and Leuconotis eugenifolius had good activities against L. donovani with  $IC_{50} < 50 \mu\text{g/mL}$ . Extracts of U. grandiflora, C. costatus, T. peduncularis, L. eugenifolius, A. subulatum, and C. aeruginosa had good activities against P. falciparum K1 with  $IC_{50} < 10 \mu\text{g/mL}$ . Pinoresinol isolated from C. costatus was inactive against L. donovani and P. falciparum. C. costatus extract and pinoresinol increased the sensitivity of Staphylococcus epidermidis to cefotaxime. Pinoresinol demonstrated moderate activity against influenza virus ( $IC_{50} = 30.4 \pm 11 \mu\text{g/mL}$ ) and was active against Coxsackie virus B3 ( $IC_{50} = 7.1 \pm 3.0 \mu\text{g/mL}$ ).  $\beta$ -Amyrin from L. eugenifolius inhibited L. donovani with  $IC_{50}$  value of  $15.4 \pm 0.01 \mu\text{M}$ . Furanodienone from C. aeruginosa inhibited L. donovani and P. falciparum K1 with  $IC_{50}$  value of  $39.5 \pm 0.2$  and  $17.0 \pm 0.05 \mu\text{M}$ , respectively. Furanodienone also inhibited the replication of influenza and Coxsackie virus B3 with  $IC_{50}$  value of  $4.0 \pm 0.5$  and  $7.2 \pm 1.4 \mu\text{g/mL}$  (Ribavirin:  $IC_{50}$ :  $15.6 \pm 2.0 \mu\text{g/mL}$ ), respectively. Our study provides evidence that medicinal plants in Malaysia have potentials as a source of chemotypes for the development of anti-infective leads.