Ten plant extracts commonly used by the Meru community of Kenya were evaluated for the in vitro antiplasmodial, in vivo antimalarial, cytotoxicity and animal toxicity activities. The water and methanol extracts of Ludwigia erecta and the methanol extracts of Fuerstia africana and Schkuhria pinnata exhibited high antiplasmodial activity (IC(50) < 5 microg/mL) against chloroquine sensitive (D6) and resistant (W2) Plasmodium falciparum clones. The cytotoxicity of these highly active extracts on Vero E6 cells were in the range 161.5-4650.0 microg/mL with a selectivity index (SI) of 124.2-3530.7. In vivo studies of these extracts showed less activity with chemosuppression of parasitaemia in Plasmodium berghei infected mice of 49.64-65.28%. The methanol extract of Clerodendrum eriophyllum with a lower in vitro activity (IC(50) 9.51-10.56 microg/mL) exhibited the highest chemosuppression of 90.13%. The methanol and water extracts of Pittosporum viridiflorum were toxic to mice but at a lower dose prolonged survival of P. berghei infected mice ($p < 0.05$) with no overt signs of toxicity. However, the extracts were cytotoxic (SI, 0.96-2.51) on Vero E6 cells. These results suggest that there is potential to isolate active non-toxic antimalarial principles from these plants.