Antitrypanosomal and cytotoxic activities of selected medicinal plants and effect of Cordyline terminalis on trypanosomal nuclear and kinetoplast replication

ABSTRACT

Surra is a hemoprotozoal disease affecting domesticated and wildlife animals. The causative agent is the hemoprotozoan parasite Trypanosoma evansi. Only few drugs are currently available for the treatment of this disease that are old and encounter the problem of resistance emergence, which punctuates the urgent demand for new drugs for the treatment of surra. In the current study, the antitrypanosomal activity of the aqueous and ethanol extracts of five selected medicinal plants namely Acanthus ilicifolius, Allium sativum, Cordyline terminalis, Goniothalamus tapis and Maesa ramentacea was evaluated in vitro against T. evansi strain Te7 and the cytotoxic activity of the extracts was evaluated on Vero cells using MTT-cell proliferation assay. The ethanol extract of leaves of G. tapis scored the most potent antitrypanosomal activity (IC50 of 7.61µg/ml) and a selectivity index (SI) of 11.47, while the aqueous extract of C. terminalis leaves exhibited an IC50 of 48.1 µg/ml and the highest SI of 27.21. Addition of 50 µg/ml of C. terminalis extract to T. evansi culture has led to a significant inhibition of nuclear and kinetoplast DNA replication, contributing to its in vitro antitrypanosomal activity. From the current study, it can be concluded that the aqueous extract of leaves of C. terminalis shows considerable antitrypanosomal activity and it could be a potential source of new antitrypanosomal compounds.

Keyword: Cordyline terminalis; Plant extracts; Trypanosoma evansi