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POTENTIAL ANTITRYPANOSOMAL COMPOUND FROM *Dyera costulata* AND ITS APOPTOTIC EFFECT ON *Trypanosoma brucei brucei*

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Trypanosoma brucei is a protozoan parasite transmitted by the bites of infected tsetse fly to veterbrate hosts. It is responsible for the Human African trypanosomiasis (HAT), a disease which can be fatal if untreated. The parasite forms trypomastigotes in vertebrate hosts and epimastigotes in the insect vector. In a previous study, extracts of *Dyera costulata* leaves exhibited strong *in vitro* inhibition activity against the bloodstream forms of *T.b brucei* strain BS221. The Alamar Blue Assay was used which incorporates a colorimetric growth indicator based on detection of cell metabolic activity. One active compound ochrolifuanine A (OchA) was isolated from the methanolic extract of this plant based on bioassay guided isolation and various chromatographic techniques. The compound structure was identified as bisindole alkaloid by spectroscopic data of NMR, MS as well as by comparison with the reported data. The compound showed potent antitrypanosomal activity with IC_{50} value 0.05 ± 0.01 µg/mL and moderate selectivity (Selectivity Index, SI: 52) towards the protozoal cells. The effect of OchA on apoptotic DNA fragmentation in *T.b.brucei* cells treated with the compound was observed using TUNEL Assay. The parasite cells were treated with three different concentrations of OchA (0.5 x IC_{50}, IC_{50} and 2 x IC_{50}) and incubated at different incubation periods (6, 12, 24 hours). Ochrolifuanine A was found to induce parasite apoptosis in dose- and time-dependent manner. Parasite cells treated with IC_{50} concentration of OchA underwent early apoptosis, as more than 50% apoptotic cells were detected as early as 6 hours of incubation. Additional studies on measurement of DNA content in parasites was carried out using flow cytometry. The parasite cells were incubated for 24 hours at different concentrations of OchA (0.5 x IC_{50}, IC_{50} and 2 x IC_{50}). The parasite cell nuclei were then quantified for their cell volume to determine cell cycle arrest affected by OchA. These findings indicate the promising effect of OchA to induce apoptosis and inhibit trypanosome parasites.