

عنوان مقاله:

Evaluation of erythrocyte viability, antioxidant capacity and antiplasmodial activity induced by alkaloid extract of
Phyllanthus amarus

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خلاصه مقاله:

Introduction: The production of large amounts of reactive oxygen species in severe malarial infection is due to parasite invasion to erythrocytes. Malaria resistance to medication has left malaria-endemic countries with no alternate source of medications but traditional medicine. One of such plants utilized by traditional healers is *Phyllanthus amarus*. Therefore, this study aims at ascertaining the antiplasmodial and cytotoxic activities of *P. amarus* and its specific actions on retaining erythrocyte viability and antioxidant activity. **Methods:** Antiplasmodial and erythrocyte viability activities were determined in vitro via parasite suppression and tetrazolium-based colorimetric assays, respectively. Antioxidant capacity was determined by measuring extract's ability to inhibit lipid peroxidation, scavenge 1,1-diphenyl-2-picrylhydrazyl (DPPH) and superoxide ions, reduce iron(III) ions, and chelate iron in vitro using documented methods. **Results:** Alkaloid extracts of *P. amarus* showed great antiplasmodial activity ($IC_{50}=0.52\mu g/mL$) and low cytotoxic activity ($CC_{50}=54.95\mu g/mL$). Erythrocyte viability assay showed the minimal impact of the extract on the uninfected erythrocytes but improved viability of the infected RBC in a dose dependent manner, and antioxidant activity manifested mainly in its iron chelating activity ($EC_{50}=0.34\mu g/mL$). **Conclusion:** This study suggests that the alkaloid extract of *P. amarus* has significant antiplasmodial and antioxidant activities. These activities promoted the repair of parasite-induced free radical damage to the erythrocyte membrane but distorted the parasites redox balance and defense mechanism, and hence survival rate as indicated by the parasite suppression associated with alkaloid extract treatment of malarial infection.

کلمات کلیدی:

Iron chelating agents, Parasites, Reactive oxygen species Ethnomedicine, Red blood cells, Parasitology

لینک ثابت مقاله در پایگاه سیویلیکا:

