

## **ABSTRACT**

Cyphostemma adenocaula (Vitaceae) is used by traditional health practitioners in northeastern Tanzania, for treatment of cancer but there is no information available regarding its safety and efficacy. This study was conducted to determine the activity of the root extracts against brine shrimps, antioxidant and cytotoxicity against HeLa cancer cells. A (1:1) dichloromethane/ methanol extract of powdered roots was fractionated by vacuum liquid chromatography to obtain petroleum ether, dichloromethane and ethyl acetate fractions, which were tested for toxicity against *Artemia salina* larvae and antioxidant activity using the DPPH and FRAP assays. The ethyl acetate fraction exhibited the highest toxicity on brine shrimps (LC<sub>50</sub> = 3.9 µg/ml), and antioxidant activity with EC<sub>50</sub> = 162.88 µg/ml and 100.04 Fe<sup>2+</sup>/µM ECGC equivalent/g dry weight, for DPPH & FRAP assay respectively. Further tests of fraction to the HeLa cervical cancer cells, demonstrated apoptotic cell death with the (IC<sub>50</sub> 3.4 ± 0.3µg/ml), that was characterized by cell cycle arrest at the M phase, phosphatidylserine externalization, Caspase 3 and 8 activation and time-dependent reduction in mitochondrial membrane potential down to zero after 48 h. The results support claims by THPs, however, more studies using different cancer cell lines, are needed to determine clinical application of the results.

**Keywords:** Antioxidant, Antiproliferative, Brine shrimp toxicity, *Cyphostemma adenocaula*, HeLa cervical cancer cells