

In vitro Investigation of Genotoxic and Antigenotoxic Properties of *Gunnera perpensa* Roots Extracts

Authors : P. H. Mfengwana, S. S. Mashele, L. Verschaeve, R. Anthonissen, I. T. Manduna

Abstract : *Gunnera perpensa* is traditionally used mostly by women for the treatment of different gynaecological related conditions due to its proven uterine contractility effects. The uses of this plant include menstrual pain relief, treatment of infertility and promotion of easy labour. However, even though this plant species has been reported to possess numerous medicinal properties, to author's best knowledge, its safety has not been investigated. Thus, this study was aimed at investigating the genotoxicity and antigenotoxicity of *Gunnera perpensa* aqueous, methanol and dichloromethane extracts. The in vitro toxicity of the plant extracts was assessed with the neutral red uptake (NRU) test. Genotoxic and antigenotoxic properties of *Gunnera perpensa* were investigated using high-throughput assays: bacterial Vitotox test and the alkaline comet assay with and without S9 activation on human C3A cells. Ethyl Methanesulfonate (EMS) and 4-nitroquinoline-oxide (4-NQO) were used as positive controls, respectively. All extracts showed toxicity in a dose-dependent manner; however, that does not mean they were all genotoxic. Methanol extract did show genotoxicity with S9 (metabolism) only at the highest concentration of 500 µg/ml due to increased DNA damage observed, however, no genotoxicity was observed from other concentrations. Therefore, the results show that *Gunnera perpensa* extracts are genotoxic and not safe for human use.

Keywords : antigenotoxicity, comet test, genotoxicity, *Gunnera perpensa*, vitotox assay

Conference Title : ICNPDD 2019 : International Conference on Natural Products and Drug Discovery

Conference Location : London, United Kingdom

Conference Dates : February 14-15, 2019