

## In vitro Immunomodulatory and Anti-Inflammatory Effects of the Commelina Benghalensis Plant Extract on RAW 264.7 Murine Macrophage Cell Line

**Mmampeule, C.M.**

Department of Biochemistry, Microbiology and Biotechnology, Faculty of Sciences and Agriculture. University of Limpopo, South Africa

**Ndlovu, M.J.\***

Department of Pathology, Faculty of Health Sciences, University of Limpopo, South Africa

**Makgatho, M.E.**

Department of Pathology, Faculty of Health Sciences, University of Limpopo, South Africa

**Matsebatlela, T.**

Department of Biochemistry, Microbiology and Biotechnology, Faculty of Sciences and Agriculture. University of Limpopo, South Africa

### Abstract:

Chronic inflammatory diseases emerge as a response to the disorders of inflammatory processes and excessive production of pro-inflammatory mediators initiating an inflammatory reaction cascade. The plant biomolecules can be used for treatment of inflammatory skin diseases emanating from their influence on different stages of inflammation.

**Objectives:** Immunomodulatory and Anti-inflammatory effects of the Commelina benghalensis plant extract on the Raw 264.7 murine macrophage cell line was assessed using different assays.

**Methods:** Secondary metabolites detection and ferric reducing antioxidant activity of the plant extract was spectrophotometrically shown using ascorbic acid as a standard. Immunomodulatory and Anti-inflammatory effects on Raw 264.7 cell line was assessed by employing MTT, Annexin-V flous and Griess reagent assay.

**Results:** There were observations of the presence of saponins, flavonoids, glycosides, tannins, carbohydrates and concentration-dependent ferric reducing antioxidant power of the plant extract. The extract was shown to have minimal effects on cell proliferation or induction of apoptosis and production of Nitric Oxide (NO) was inhibited in a concentration-dependent manner.

**Conclusion:** The compounds contained in C. benghalensis can be used in the treatment of oxidative stress-related disorders and the potential development of novel immunomodulatory drugs.

### Keywords:

Immunomodulatory, anti-inflammatory, antioxidant, nitric oxide.