Investigation of Cytotoxicity of *Eragrostis Tremula* on Human Ovarian Cancer Cell Line Ovcar 3 Ex Vivo

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ABSTRACT

Statement of the Problem: Plants have been used for medical purposes since the beginning of human history and are the basis of modern medicine. Most chemotherapeutic drugs for cancer treatment are molecules identified and extracted from plants or their synthetic derivatives. Current treatment modalities for cancer, which include surgery, chemotherapy and radiotherapy are associated with adverse side effects arising from lack of specificity for tumours. Here we show that the methanolic root extract of *Eragrostis tremula* could be an effective alternative anti-tumour agent. Phytochemical screening of the methanolic roots extract by using different biochemical tests confirmed the presence of phyto-constituents

like Alkaloids, Flavonoids, Glycosides, Phenol, Saponin, Steroids/Terpenoids, Tanin, and Cardial glycoside.

Methodology and Theoretical orientation: Ex vivo cytotoxic activities of extracted root on cancerous and non-cancerous cell lines were evaluated by using (3-(4,5-dimethyl thiazole2yl)-2,5-diphenyl tetrazolium bromide) MTT-based assay and Cychlophophamine(CPY) as control.

Findings : The result of IC50 show selective cytotoxicity on tumour cell line OVCAR3/CPY (5.02±0.31/1.25±0.05µg/mL). The observed cytotoxic effect which is dose dependent was significant. The extracts failed to show cytotoxicity on HaCaT/CPY (97.22±0.45/77.3±0.8 µg/mL) cells at the concentration that was cytotoxic to tumour cell line, indicating less cytotoxic effects of the extract against human 'non-cancerous' cells). Furthermore, Hoechst 33342 staining and DNA fragmentation assays revealed hallmark properties of apoptosis such as membrane blebbing, nuclear condensations, and DNA fragmentation.

Conclusion& Significance: The methanolic root extract of *Eragrostis tremula* could be an effective alternative as an anti-tumour agent and the specificity index need to be further evaluated with multiple tumor cell lines to establish its universality. Also tobe evaluated is the mechanisms of cytotoxicity. The fact that the plant is very common will most definitely make the platform very attractive and less cost effective in cancer management.

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