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INVESTIGATION OF ANTI-LEUKEMIC AND ANTI-CLASTOGENIC POTENTIALS OF SOME MEDICINAL PLANTS KNOWN FOR THE TREATMENT OF LEUKEMIA IN OGBOMOSO, NIGERIA

Adewale Adetutu
Ladoke Akintola University of Technology, Nigeria

Leukemia is a cancer of the blood and bone marrow that is characterized by uncontrolled proliferation of immature blood cells that originate from mutated hematopoietic stem cells. Globally, leukemia accounts for about 200 and 22000 deaths annually. The side effects of chemotherapy in leukemia treatment have necessitated the search for natural products especially medicinal plants as alternative therapy. Therefore, this study investigated some medicinal plants that are popularly used for the treatment of leukemia in Ogbomoso for possible anti-leukemic and anti-clastogenic activities. Leukemia was induced with 400 mg/kg body weight of benzene intraperitoneally. 100 g of the pulverized plant leaves were extracted in four liters distilled water and the extract was fractionated using the solvent-solvent extraction method. The anti-leukemic potentials were evaluated by microscopic examination of peripheral blood and bone marrow smear for the presence of blast. Chromosomal damage was evaluated in the mice bone barrow smear using the micronucleus assay. The antioxidant activity was assayed by measuring the level of reduced glutathione (GSH), superoxide dismutase (SOD) and catalase (CAT) in the liver homogenate of mice. The hematological parameters were analyzed using standard method. Liver samples of treated mice were processed for histological analysis using heamoxylin and Eosin stains. The aqueous extract of the selected plants exhibited significant ($p<0.05$) anti-clastogenic activity while *N lotus* and *M lucida* showed significant ($p<0.05$) anti-leukemic potential. Aqueous extracts of *M lucida* and *X aethiopica* caused significant ($p<0.05$) increase in the number of RBC, hemoglobin concentration and packed cell volume. Treatment of mice with *N lotus* and P stratiotes caused improvement in liver cyto-architecture relative to the control. Treatment with the fractions of *N lotus* significantly ($p<0.05$) reduced the number of micro nucleated polychromatic erythrocyte in the bone marrow. Ethyl acetate fraction of *N lotus* treated group showed significant ($p<0.05$) anti-leukemic activity. Fractions of *N lotus* increased the number of red blood cell, hemoglobin concentration and packed cell volume. Administration of fractions of *N lotus* to mice caused significant ($p<0.05$) increase in CAT activity, SOD activity and GSH concentration. The histological indices showed improvement in general cyto-architecture in the mice treated with ethyl acetate and butanol fraction groups of N lotus. In conclusion, this study affirms the anti-leukemic and anti-clastogenic activities of some traditionally acclaimed anti-leukemic plants in Ogbomoso. Therefore, further studies should be done to isolate and characterize the active components of extracts and deduce the possible mode of action.